Service Manual

For

HD2+ DC3 DLP Front Projector

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Service Safety Notes

Please read the Service Safety Notes before any service work is performed. Service work should be performed by qualified service technicians who are familiar with safety check and the DLP front projector, and take related service training before servicing.

Warning

1. Place the projector on even surface during service work is performed.

2. Service work need to perform in an environment that is smoke and dust free. When used in areas where there is a lot of smoke or dust, the filter and lens should be cleaned before projector is returned to the user.

3. Disconnect power cord before servicing

4. The temperature of the lamp, ventilation slots and objects next to them may be extremely high during operation. Do not touch these areas before the temperature is sufficiently cool down.

5. Do not touch the internal structure of the lamp, any stain on the internal structure may cause unfixable damage on the lamp.

6. Do not stare into the beam of light or view directly. If stare into the beam of light is necessary for checking the lens, please wear sun-glasses.

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1. Purpose

The purpose of this manual is for the reference of authorized technician while proceeding level 1 service for the product mentioned in this manual.

2. Definition of service level

Considering the service capability and the equipments of each service station may be different and the raising on service efficiency, service works have been concluded to 3 levels and defined by Customer Service Dept. (CS hereafter).

The definition of "level 1 service" is defined based on service efficiency and effectiveness considerations. Level 1 service means modules replacement for projector. The concrete composition of level 1 modules (parts) will be mentioned in item 4.4 Composition of level 1 modules (parts). Level 1 service can be perform in a smoke and dust free environment and with limited equipments like computer and DVD Player.

"Level 2 service" is defined as service on the PCBA. The technician who performs "level 2 service" should be knowledgeable on electricity system, except safety checks. Electronic equipment, such as AC/DC power source, oscilloscope, and other test equipments, are needed for performing level 2 service.

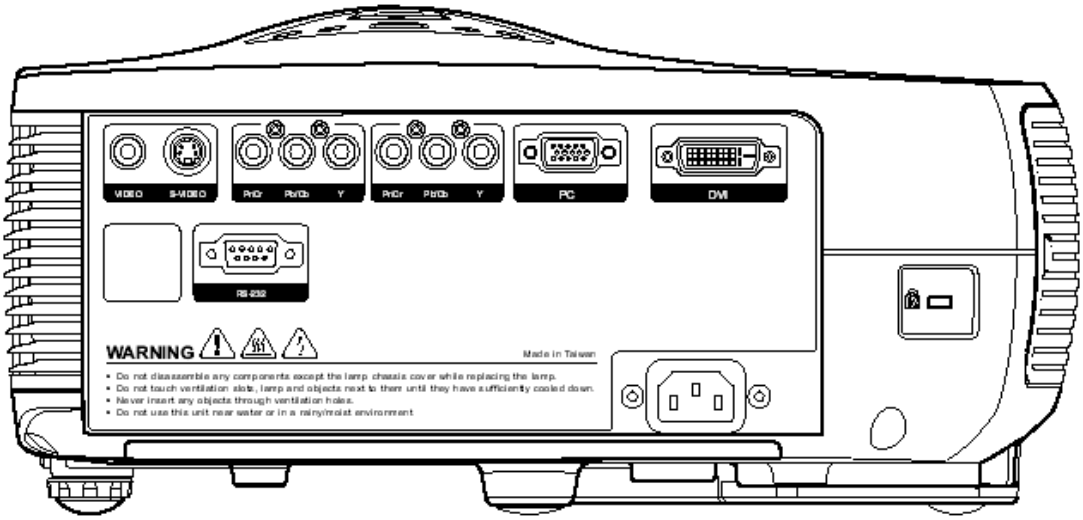
"Level 3 service" is defined as service on the optical engine, but fans and lamp replacement. The service work on the optical engine should be performed in clear room.

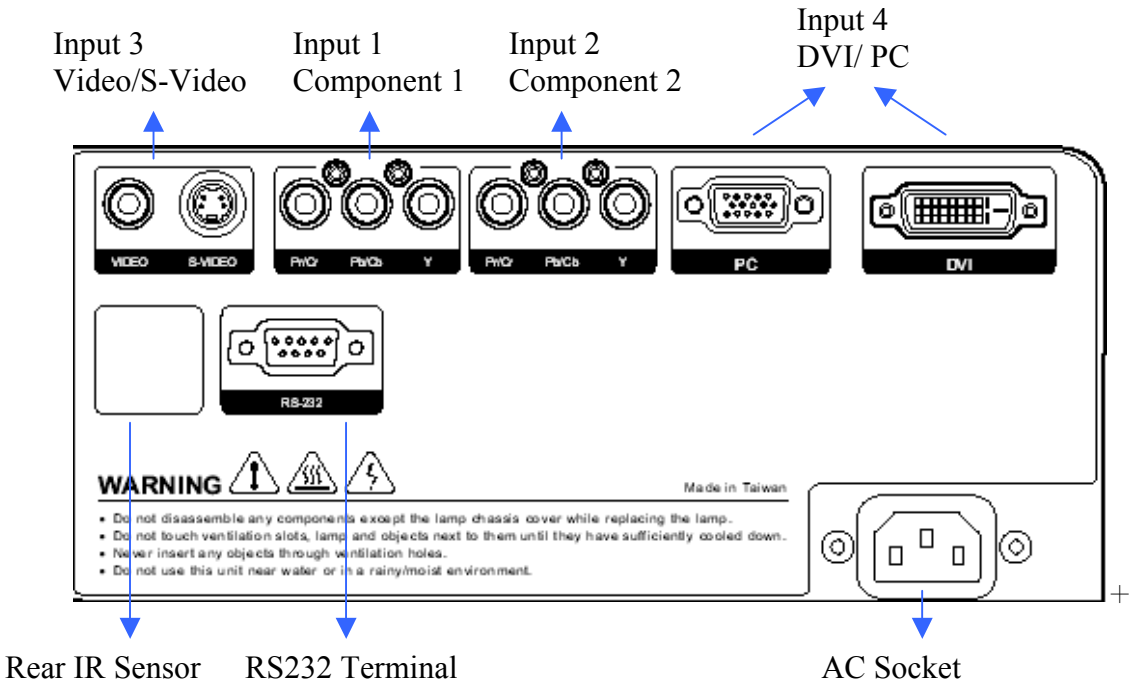
3. Specification

Please refer to CLO released HD2+ DC3 DLP Front Projector Approval Sheet.

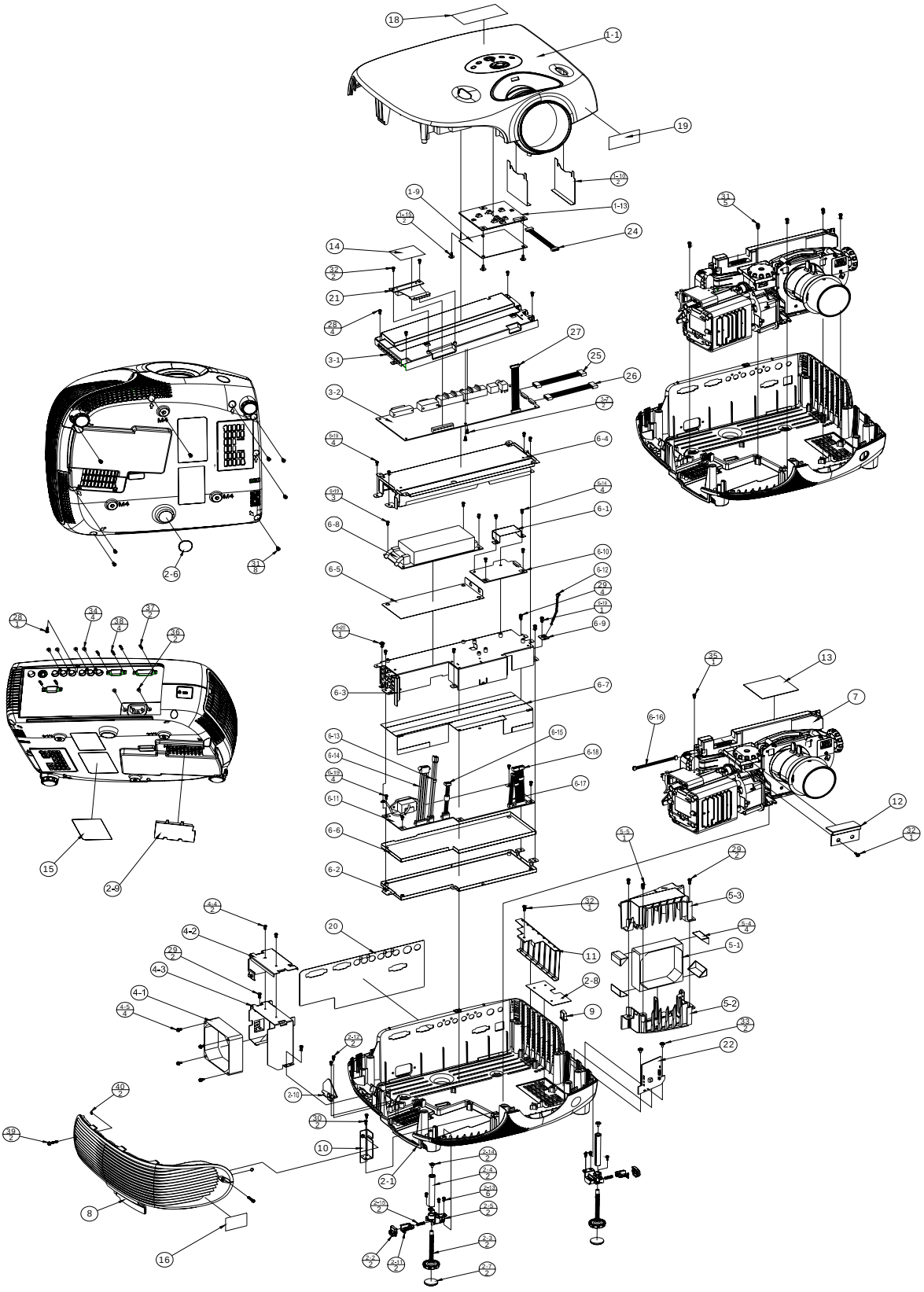
4. Structure of the Product

4.1 I/O Interface


VIDEO
S-VIDEO
PrCr
PbCb
Y
PrCr
PbCb
Y
PC
DVI
RS-232
WARNING
Made in Taiwan
• Do not disassemble any components except the lamp chassis cover while replacing the lamp.
• Do not touch ventilation slots, lamp and objects next to them until they have sufficiently cooled down.
• Never insert any objects through ventilation holes.
• Do not use this unit near water or in a rainy/moist environment.



4.2 Exploded View (attached as Appendix II)



4.3 Detail description of parts shown in 4.2 Product exploded View

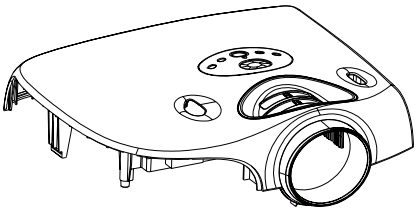
ITEM	PART NAME	QTY	ITEM	PART NAME	QTY
1	P07260 TOP COVER SET(SILVER)	**1**	30-12	SCREW PH M3-0.5*5 C2	3
2	P05760 BOTTOM COVER(SILVER)	1	30-13	SCREW PH+EXW M4-0.7*6 C2	1
3	P05760 LAMP DOOR(SILVER)	1	30-14	SCREW PH M3-0.5*5 C2	13
4	P05760 FRONT LEG BUTTON	2	30-15	WIRE POWER-BALLAST 3P 150MM	1
5	P05760 FRONT LEG	2	30-16	WIRE FORMAT-BALLAST 5P 280MM	1
6	P05760 FRONT LEG COVER	2	31	PCBA P05760 CONTROL BOARD	1
7	P05760 FRONT LEG TOP HOUSING	2	32	PCBA P05760 KEYPAD BOARD	1
8	P05760 8025 FAN LOWER DUCT	1	33	PCBA P05760 VIDEO BOARD	1
9	P05760 8025 FAN UPPER DUCT	1	34	PCBA P05760 CONNECTION BOARD	1
10	P05760 8025 LAMP FAN RUBBER	4	35	WIRE POWER-CONTROL 6P 220MM	1
11	P05760 REAR RUBBER FOOT	1	36	WIRE POWER-VIDEOFORMAT 20P 120	1
12	P05760 FRONT LEG RUBBER	2	37	WIRE POWER-LAMPSWITCH 4P 90MM	1
13	P05760 KEYPAD PCB MYLAR	1	38	WIRE VIDEO-I/O 10P 60MM	1
14	P07260 RING CAP MYLAR RIGHT	1	39	WIRE VIDEO-CONTROL 12P 250MM	1
15	P07260 RING CAP MYLAR LEFT	1	40	WIRE CONTROL-KEYPAD 6P 430MM	1
16	FAN 12V DC 0.09A D80 AXIAL	1	41	WIRE VIDEO-KEYPAD 14P 240MM	1
17	FAN 12V DC 0.09A D80 AXIAL	1	42	WIRE SENSOR(P)-CONTROL 2P 240	1
18	P05760 VIDEO UPPER SHIELDING	1	43	WIRE POWER-THERMOSTAT 2P 220MM	1
19	P05760 BOTTOM NET	1	44	WASHER D2.5 E-RING STEEL	2
20	P05760 BOTTOM NET COVER	1	45	SCREW PH M3-0.5*5 C2	9
21	P05760 VIDEO SIDE NET	1	46	SCREW PH D3*8 C2	15
22	P05760 PCB FAN METAL DUCT	1	47	SCREW PH D3*5 C2	4
23	P05760 PCB FAN DUCT SHIELDING	1	48	SCREW BH M3-0.5*8 C2	13
24	P05760 LAMPDOOR FRONT LOCK	1	49	SCREW WH8 D3*6 C2	5
25	P05760 LAMPDOOR SIDE LOCK	1	50	SCREW WH8 M3-0.5*4 C2	10
26	P05760 FRONT LEG SLIDING	2	51	SCREW FH M3-0.5*10 C2	2
27	P05760 SAFETY LABEL	1	52	SCREW FHM3*8TP-P	4
28	P05760 I/O DECORATION LABEL	1	53	SCREW BH M4-0.7*9 C2 (E-RING)	2
29	P07260 OPTICAL ENGINE	**1**	54	SCREW HH UNC#4-40*8 H5	4
30	P05760 POWER MODULE	**1**	55	SCREW HH UNC4#-40*7 H5	2
30-1	P05760 POWER LOWER SHIELDING	1	56	P05760 FRONT LEG SPRING	2
30-2	P05760 POWER UPPER SHIELDING	1	57	P05760 CABLE CLAMP	1
30-3	P05760 BALLAST SHIELDING	1	58	AL TINESL 100*37 (2-D6)	1
30-4	P05760 I/O PCB SHIELDING	1	59	P05760 EMI GASKET	1
30-5	P05760 POWER LOWER MYLAR	1	60	TEMPERATURE LABEL	1
30-6	P05760 POWER UPPER MYLAR	1	61	P05760 DLP LOGO LABEL	1
30-7	P05760 BALLAST LOWER MYLAR	1	62	P07200 LOGO LABEL METAVISION	1
30-8	P05760 BALLAST 250W AC380V	1	63	P05760 TOP COVER SPONGE	2
30-9	PCBA P05760 IO BOARD	1	64	P05760 CONNECTION PRESSING	1
30-10	PCBA P05760 SENSOR BOARD	1	65	P05760 COVER LENSSHIFT SPONGE	1
30-11	PCBA P05760 POWER BOARD	1			

4.4 Composition of Level 1 Modules (Parts)

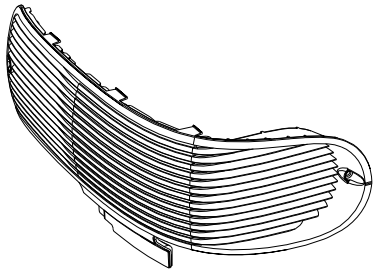
Level 1 service means to replace all mechanical parts (cover, base, screw and label so on),electronic modules (also include the cable which connects two modules) listed below on this page and next page.

In order to help technician understand the figure and composition of each module and mechanical part, drawing of modules and parts are as drawing listed on this page and next page. Others (ex. Cable, Screw, Packing material, Accessories, etc.) are not included in following drawings. The items of level 1 service will be updated base on ASP (After Service Provider) capability and efficiency/effectiveness consideration.

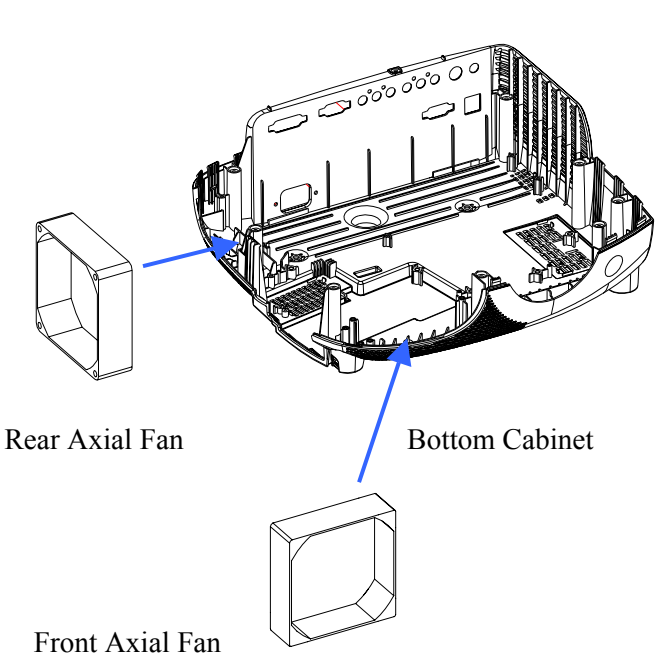
Mechanical Parts:



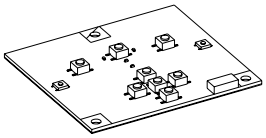
Upper Cabinet



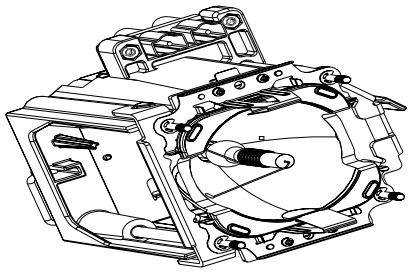
Lamp Door



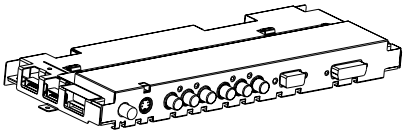
Electronic Parts:



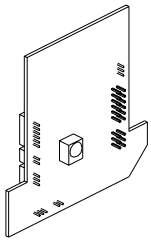
Keypad



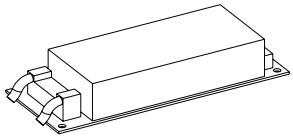
Lamp



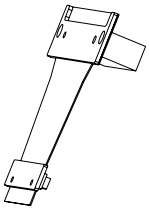
Video Module



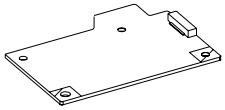
Control Board



Ballast

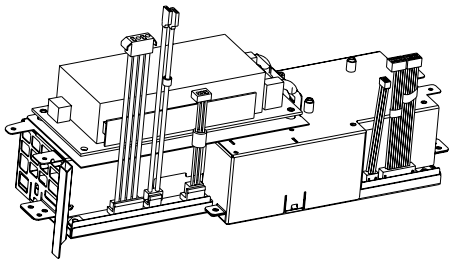


Connection Board



IO Board

Thermal Sensor



Power Module

5. Troubleshooting

You use the Troubleshooting section to diagnose problems with projector. You can refer to a variety of symptoms for troubleshooting. Each symptom leads you trough a series of steps that will ultimately result in a solution. The solutions begin with the most simple and progress to the most complex.
In addition to the Troubleshooting Table, you can also check internal voltages and signals to diagnose a defective part by Block Diagram.

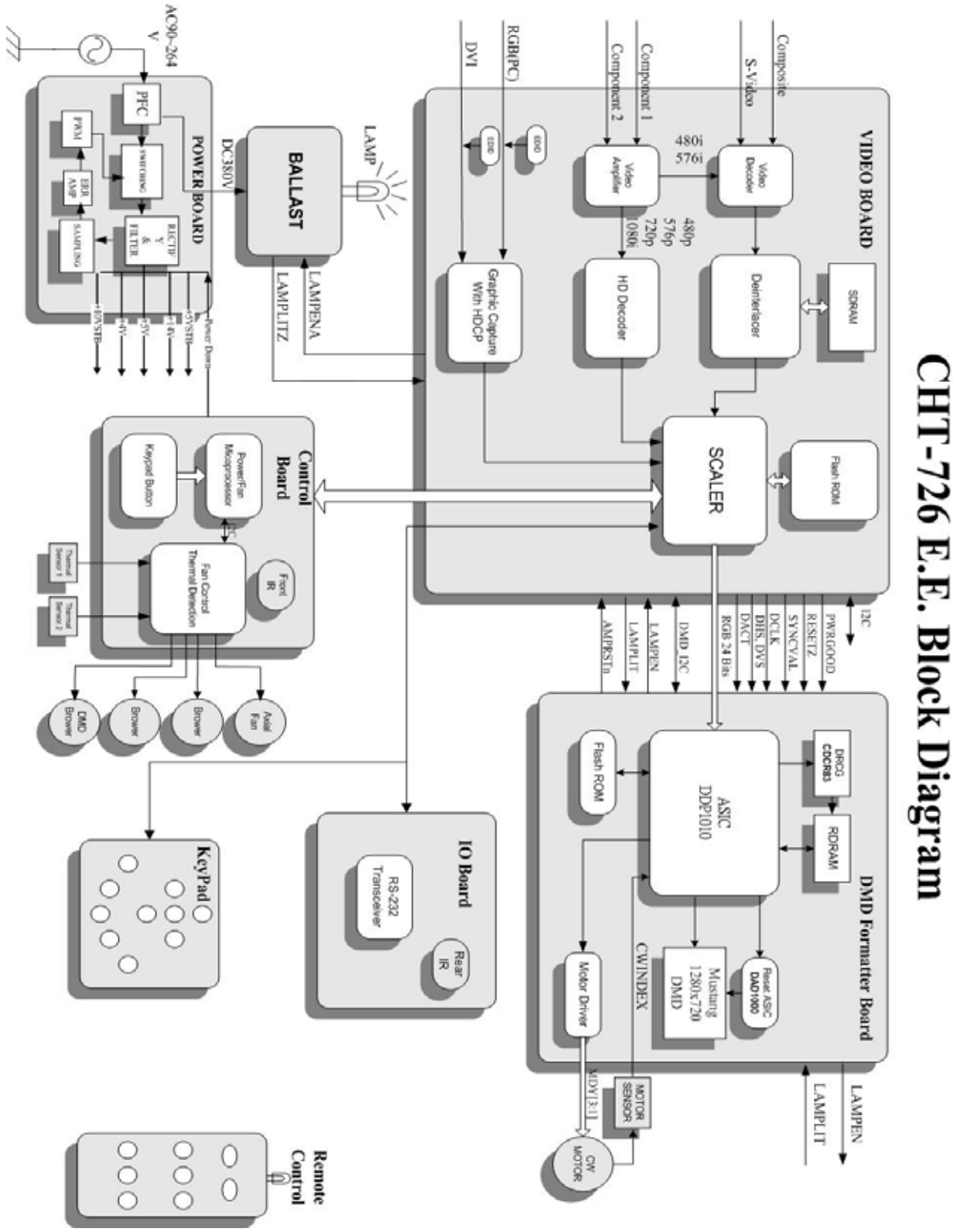
5.1 Troubleshooting Table

Symptoms	Possible Cause	Countermeasures
Blue LED doesn't light up	➢ The cable from the keypad to control board does not connect well. ➢ The cable from control board to power module doesn't connect well ➢ The keypad malfunction ➢ The control board defective ➢ The power module malfunction	➢ Check the connection of the cables ➢ If the projector illuminates after pressing the power key, please replace the keypad. ➢ Replace the control board. ➢ Replace the failed power module
Remote controller failure	➢ Batteries are dead ➢ Remote controller malfunction ➢ IR sensor is malfunction	➢ Replace the batteries ➢ Replace the remote controller ➢ If the remote works fine, then test the front and rear IR sensors, if the front IR sensor fails, replace the control board. If the rear IR sensor malfunctions, replace the RS232 board.
The blue LED and the over temperature indicator flash alternately	➢ The cable for the front/rear thermal sensor doesn't connect well. ➢ The front/rear thermal sensors malfunctions	➢ Reconnect the cable to connector. ➢ Replace the abnormal front/rear thermal sensor
The sequence is two blue LED blink followed by one red indicator blink	➢ The wire for fan doesn't connect well ➢ The rear Axial Fan failure ➢ The front Axial Fan failure ➢ The blower fan failure	➢ Reconnect the wire to connector ➢ Replace the malfunction fan (front/rear/blower fan).
All three fans do not rotate.	➢ The control board fails ➢ Wrong firmware for the control board.	➢ Replace the control board. ➢ Please contact CLO for the firmware update on the control board.
Color wheel does not spin after the projector power on	➢ The wire from the power module to the formatter board does not connect well ➢ The 4 Pin FFC doesn't well connect the color wheel and the	➢ Check the wire ➢ Check the connector pins on connect board. ➢ Remove the connect board from the video module and disconnect the wire

	formatter board ➢ The connect board deficient ➢ The video module malfunctions ➢ The formatter board fails.	from the power module to Video module, power on projector, if the color wheel spin normally, it means the formatter board functions well, but the video module malfunctions. Otherwise, the formatter board fails, please contact CLO for level 3 service.
The lamp doesn't light up after the projector powers on, but the color wheel and fans spin normally	➢ Lamp failure ➢ The 5-pin wire which connects from ballast to the formatter board doesn't connect well ➢ The black wire from Ballast to lamp doesn't connect well or is failed ➢ The white switch from the power module to the lamp housing doesn't well connect. ➢ The connect board malfunctions or doesn't connect the formatter board and the video module well ➢ The Ballast malfunctions ➢ The rotation rate of the color wheel isn't correct.	➢ Replace the lamp ➢ Reconnect the wires or replace the failed wires ➢ Reconnect the connect board. If it is failed, replace it. ➢ Replace the ballast ➢ The failure on photo sensor will cause the spin rate of color wheel isn't correct, please contact CLO for the level 3 service for repairing photo sensor.
The keypad malfunction	➢ Keypad is defective if one or two buttons no function ➢ The wire from the video module to the keypad doesn't well connect. ➢ The video module malfunctions if all buttons no function	➢ Replace the keypad if one or two buttons no function ➢ Reconnect the wire ➢ Replace the video module if all buttons no function.
Projector turns off automatically in minutes after power on.	➢ The control board malfunctions	➢ Replace the failed control board.
Screen flickering	➢ The lamp failure ➢ The Ballast failure	➢ Replace failed lamp ➢ Replace the ballast with a good one.
Screen jagged	➢ The de-interlace malfunctions	➢ Replace the video module
Incorrect image's color	➢ Incorrect color wheel index ➢ Wrong firmware for the formatter board	➢ Feed in Red 256 gray bar pattern and adjust the color wheel index ➢ Reload firmware. Please contact CLO for the detail.
"Power Off" message keeps showing up automatically.	➢ The control board fails	➢ Replace the control board

White verticals on the image	➢ The connect board malfunction ➢ DMD malfunctions	➢ Replace connect board ➢ Contact CLO for level 3 service
Incorrect image	➢ The connect board does not connect well ➢ The video module is defective. ➢ The connector on the video module fails ➢ Wrong firmware on the formatter board ➢ DMD failure	➢ Reconnect the connect board ➢ Replace the connect board. ➢ Replace the video module ➢ Reload correct firmware to formatter board. Please contact CLO for the detail ➢ Contact CLO for level 3 service
1/16 of image area is shown as a horizontal stripe	➢ The formatter board malfunction	➢ Contact CLO for level 3 service.
Update firmware failure	➢ The cable between the Video module and the power module doesn't well connect or fail ➢ The cable from the video module doesn't connect to the RS232 board ➢ The RS232 input fails ➢ The video module failure	➢ Check the connection between the video module and the power module. If it is failed, replace it. ➢ Check the cable which connects the video module and the RS232 board. ➢ Replace the RS232 board ➢ Replace the video module.

5.2 Block Diagram



6. Service Mode

The Service Mode is released for authorized distributor and technician only. It provides Test Patterns, Adjust CW, CW Index, VGA Auto Calibration, MST9888 Component YPbPr, AD9882 VGA RGB, SAA7118, DLP RGB Gain Offset, and firmware version information for the Video board, the formatter board, and the control board.

Authorized technician will need to enter service mode when doing inspection and color setting adjustment after replacing the video module.

How to enter Service Mode

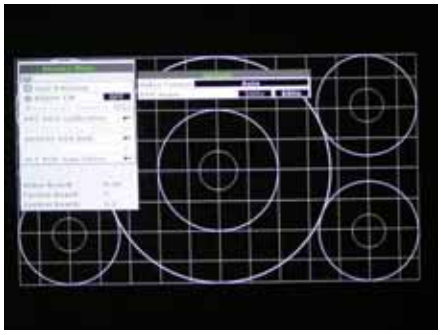
By pressing clockwise△ ▷ ▽ ◁ △ ▷ ▽ ◁ and “MENU” button to enter into the main menu of the Service Mode.

How to exit Service Mode

Press the “ exit” button to leave Service Mode

6.1 Options:

There are two items under Option, one is video format, which is set to “Auto” generally, and another is DLP Vsync.



6.2.1 Video Format

Video Format provides 20 different formats, such as NTSC 60Hz, PAL 50/ 60Hz…etc. for use. Normally, the default of video format is “Auto”, so that projector to take all video formats. However, distributor would force projector to take one video format if needed.

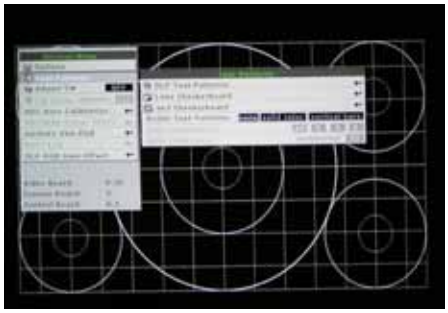
※ Caution: Once the Video Format is selected to particular format, projector will not read signal of other format.

6.2.2 DLP Vsync

DLP Vsync shows the signal is 50Hz or 60Hz.

6.2 Test Patterns:

Test Patterns provides several patterns for checking the DMD chip, back focal length, ANSI contrast, and scaler.



6.2.1 DLP Test Patterns

DLP Test Patterns contains 10 test patterns in order to check blemish, dark pixel, bright pixel, unstable pixel, adjacent pixels, and border defects.

Blue test screen

This pattern is used to test for Major Dark Blemishes and Dark Pixels. All areas of the screen are colored at a specific blue level, based on a standard 0-255 RGB scale:

	Major Dark Blemish Test
Blue Value	90
Red Value	0
Green Value	0

Gray 30 test screen

This pattern is used to test light border blemishes and bright pixels. All areas of the active area are colored at a specific gray level, based on MS Paint 0-255 RGB scale:

	Border Defect Test
Blue Value	30
Red Value	30
Green Value	30

Gray 10 test screen

This pattern is used to test Major Light Blemishes and Light Pixels. The full screen area is colored at a

specific gray level, based on a standard 0-255 RGB scale:

	Major Light Blemish Test
Blue Value	10
Red Value	10
Green Value	10

White test screen

This pattern is used to test Minor Dark Blemishes. The full screen area is colored specifically, based on a standard 0-255 RGB scale:

	Minor Dark Blemish Test
Blue Value	255
Red Value	255
Green Value	255

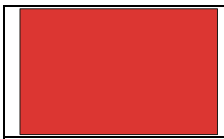
Black test screen

This pattern is used to test Minor Light Blemishes. The full screen area is colored specifically, based on a standard 0-255 RGB scale:

	Minor Light Blemish Test
Blue Value	0
Red Value	0
Green Value	0

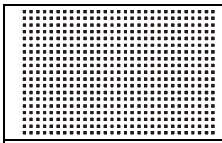
Red ramp test screen

This pattern is used to test for unstable pixels. The full screen area is colored at an increasing red level on a standard 0-255 RGB scale, beginning at 0 (black), and ending at 255 (full red):

	Unstable Pixel Test
Blue Value	0
Red Value	Start 0, end 255
Green Value	0

H/V Grid test screen

This pattern is used to test projection lens performance. It is CLO internal checking pattern for production. It is nothing to go with DMD Checking.

	H/V Grid test screen
Blue Value	N/A
Red Value	N/A
Green Value	N/A

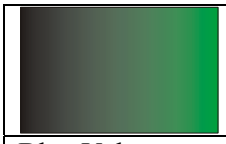
Red gray scale test screen

This pattern is used to test projection lens performance. It is CLO internal checking pattern for production. It is nothing to go with DMD Checking.

	Red gray scale test screen
Blue Value	0
Red Value	Start R0-G0-B0, End R255-G0-B0
Green Value	0

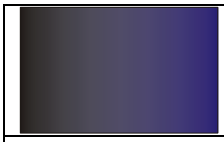
Green gray scale test screen

This pattern is used to test projection lens performance. It is CLO internal checking pattern for production. It is nothing to go with DMD Checking.

	Green gray scale test screen
Blue Value	0
Red Value	0
Green Value	Start R0-G0-B0, End R0-G255-B0

Blue gray scale test screen

This pattern is used to test projection lens performance. It is CLO internal checking pattern for production. It is nothing to go with DMD Checking.

	Blue gray scale test screen
Blue Value	Start R0-G0-B0, End R0-G0-B255
Red Value	0
Green Value	0

ACCEPTANCE REQUIREMENTS

1. Conditions of Acceptance All DMD image quality returns will be evaluated using the following projected image test conditions:
    a. Texas Instruments performs image quality acceptance testing on specifically designed HD2 DMD test equipment. If the DMD is judged to complete this test successfully, it is acceptable.

    b. Texas Instruments understands the customer will perform image quality testing in their own PTV application. Incoming test conditions must be mutually agreed to between customer and Texas Instruments before initial DMD acceptance testing begins.

    c. Texas Instruments recommends cleaning the DMD before installation to the projector, according to the instructions in the DMD Cleaning Document (TI drawing #2504640).

    d. Texas Instruments recommends handling the DMD according to the instructions in the DMD Handling Document (TI drawing #2504641)

    e. Projector de-gamma correction Curve shall be in accordance with Test Screen definitions on sheets 3 & 4 of this document. The correct RGB value must align with the appropriate De-Gamma Curve.

    Reference Note # 1:

    If the De-Gamma curve is not known then the Linear Lux values for a given test screen can be calculated by the following equations The following are center point Lux measurements for a gray screen calculation. SLR (Spoke Light Recapture) is a contributor to the white Lux value. For absolute accuracy it must be turned off when making the White Lux measurement.

    $$\frac{(\text{White Lux value} - \text{Black Lux value})}{255} = \text{Lux per Step}$$

    Therefore, the Lux Value of a Gray 10 = 10 x Calculated Lux per Step

    Reference Note # 2:

    Peak Lux Percent is calculed by determining what precent of 255 is a test screen.

    Example: Gray 10 is 10 / 255 or 3.9% of the white test screen's Lux value.

    f. The diagonal size of the projected image shall be at minimum 52inches (132cm).

    g. The projected image shall be inspected from a 60 inch (152cm) minimum viewing distance.

    h. Projector must be properly focused on the DMD array as shown on the screen.

    i. Testing time is limited to 20 seconds per screen.

j. White Peaking mode (SLR, spoke light recapture) must be turned off.

k. Refer to Table 1 for acceptance criteria, in the specified order:

2. Test Sequence:
Tests shall be run in the sequence listed in Table 1.

TEST ORDER	CHECK ITEMS	SCREEN	ACCEPTANCE CRITERIA
1	Major Dark Blemish	Blue 90	Zero Dark blemishes
2	Dark Pixel	Blue 90 Zoned Screen (See below Figure 1)	Zero Dark pixels allowed in Zone A ≤ 2 dark pixels allowed in Zone B Zero Adjacent dark pixels
3	Border Defects	Gray 30	Zero Border Defects Zero Non-Active Area Artifacts
4	Major Light Blemish	Gray 10	Zero Light blemishes
5	Light Pixel	Gray 10	Zero Light pixel
6	Minor Blemishes	White or Black	Total of Dark and Light Blemishes ≤ 6 (see note 4 for size limitation)
7	Unstable Pixel	Red Ramp Screen	Zero Unstable pixels

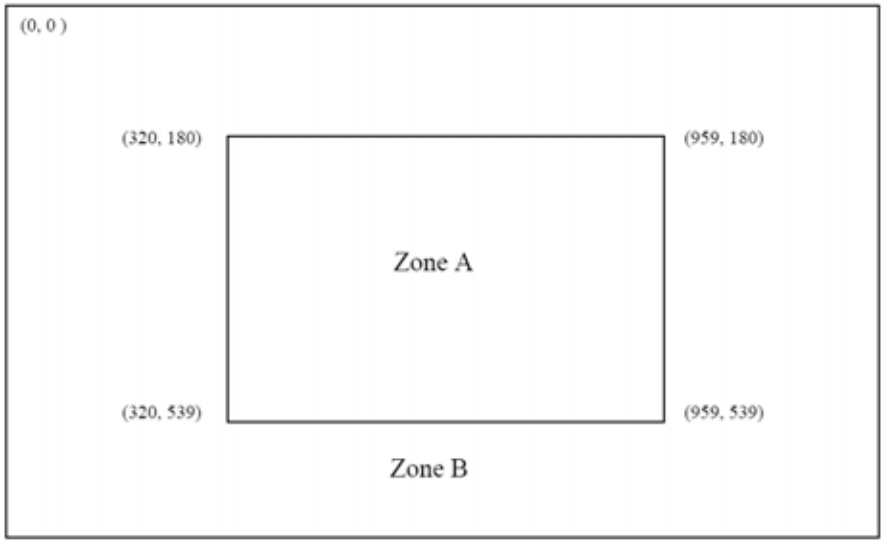
Table 1. Image Quality Specification Test Criteria

※Notes:

1. This specification applies to the active pixel area (addressed pixels) of the DMD only. All other defects outside of this area are acceptable. Also in this manner, customer projection optics must control light effectively. Light reflecting from anywhere outside of the active pixel area is not a basis for DMD acceptance.
2. All cosmetic DMD defects (scratches on the external DMD surface, for example) will be judged using the above test conditions on the projected image only.
3. Projected blemish numbers include the shadow of the artifact in addition to the artifact itself. (Count = 2).
4. The projected image shall not contain any blemish more than 4 inches long, measured on a 42 inch (107cm) diagonal screen.
5. Any defect not mentioned in the above criteria shall be acceptable, unless customer and Texas Instruments mutually agree that it is a problem for the marketplace.

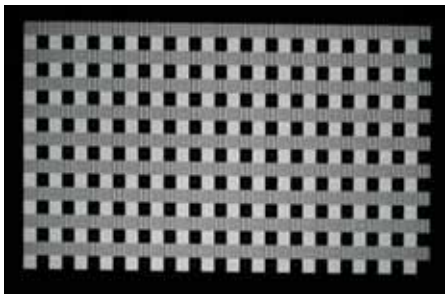
Figure 1 Two Zone Screen

Active Area is 1280 x 720



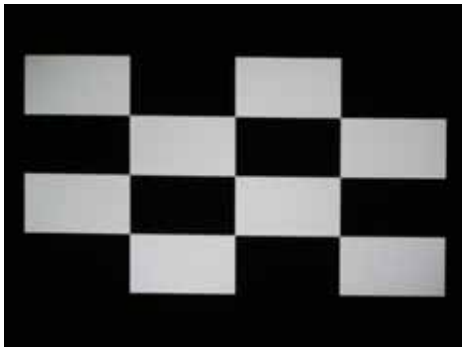
6.2.2 Lens Checkerboard

Lens Checkerboard pattern is for checking the back focal length. In normal situation, the every black pixel in white square or white pixel in black square should be clear; otherwise projector should be returned to CLO for adjustment. When you enter Lens Checkerboard, you would see the below pattern.



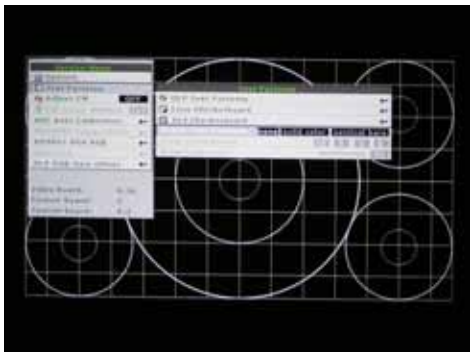
6.2.3 4 X 4 Checkerboard

4 X 4 Checkerboard is for measuring ANSI Contrast. The pattern is as below:



6.2.4 Scaler Test Patterns

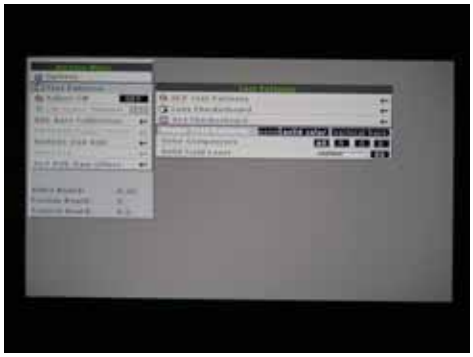
Scaler test patterns provide gray, red, green, and blue patterns for technician to check the color level setting. Normally, it must be set to “NONE”, or projector would only project pattern out even you feed in signals.



Solid Color

When Scaler test pattern is set to “Solid Color”, it is allowed to enter or exit “All”, “R”, “B”, and “G” patterns of Color components by pressing “up” and “down” buttons and pressing “Right” and “Left” buttons to adjust the each color’s level on “Solid Field Level.”

Note: Any adjustment affects the pattern only, and no effect on the performance of projector.

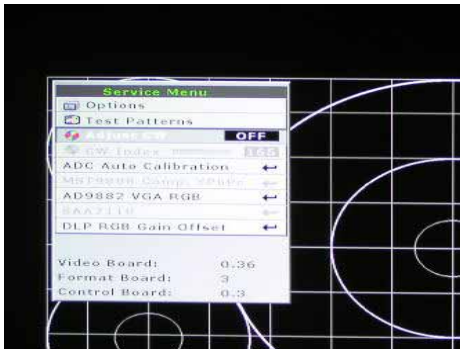


Vertical Bars

When test patterns is set to “Vertical Bars”, projector displays 64 step bar in gray, red, green and blue for people to check if the color level clear and no any color blooming.

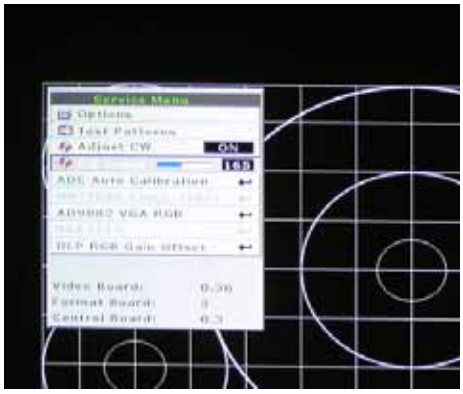
6.3 Adjust CW

When Adjust CW is “On”, repair people could adjust the CW index setting on Color Wheel; when it is “Off”, no adjustment can be done. Normally it is set to “Off”.



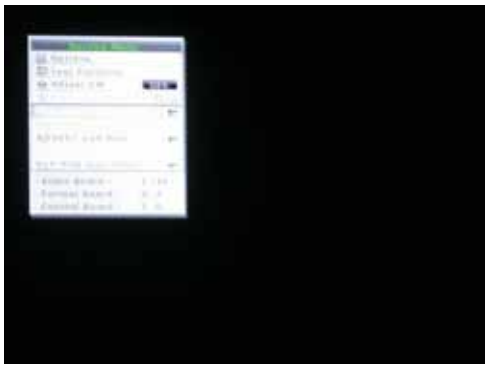
6.4 CW Index

CW Index is for setting the color coordination. This function mainly use in factory. We suggest do not change any setting on this section. However, if the video module replacement is necessary, please remember the CW Index no of the color coordination setting and load the no before the video module adjustment.



6.5 VGA Auto Calibration

VGA Auto Calibration is a function for technician to perform ADC calibration on the video board. Please refer to chapter 8.7 " Procedure of the video module adjustment" for more information.



6.6 MST 9888 Comp YPbPr

A function for people adjusts the parameter on Gain and Offset of YPbPr on MST 9888 chip when the video Board is replaced. To perform this function, please refer to chapter 8.7 "Procedure of the video module adjustment" for more information on adjustment on YPbPr parameter.

Note: MST 9888 Comp YPbPr is hided when the input signal is VGA or RGB signal.

6.7 AD9882 VGA RGB

AD 9882 VGA RGB function is for adjusting the parameter setting on VGA when Video Board is replaced. Please refer to chapter 8.7 "Procedure of the video module adjustment" to know more on this function.

Note: AD 9882 VGA RGB is hided when you input YPbPr signal.

6.8 SAA 7118

SAA 7118 is a function to adjust the brightness, contrast, saturation and tint on S-Video, Composite, and Component input.

6.9 DLP RGB Gain Offset

DLP RGB Gain Offset is allowed people to adjust the optimal gain and offset setting.

7. Firmware Updade

Firmware update is made for the need to improve performance and functionality. If you are experiencing stability, reliability or image quality issues on your CLO projectors, the firmware update might be an option of the solutions. Due to the hardware version may vary among versions and models, each firmware update only provides solutions to specific issues in specific version & models of machine. Applying inappropriate firmware might cause malfunction on your projectors. Please, check the documentations or needed information (such as hardware version, firmware version or serial number) associate with firmware before applying firmware on your projector.

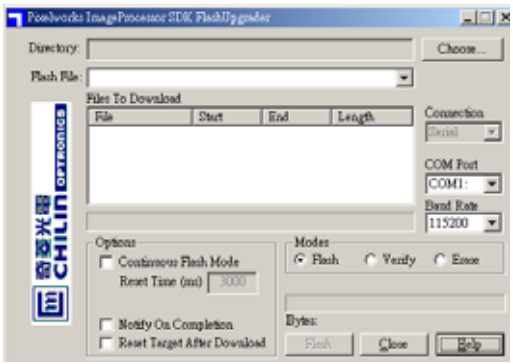
To update firmware for NHT 726 front projector, you need a RS-232 cable and Flash Upgrader.exe on Projector Service AID CD that only provide to authorized technician and distributor.

Procedure to Update Firmware on Video Module

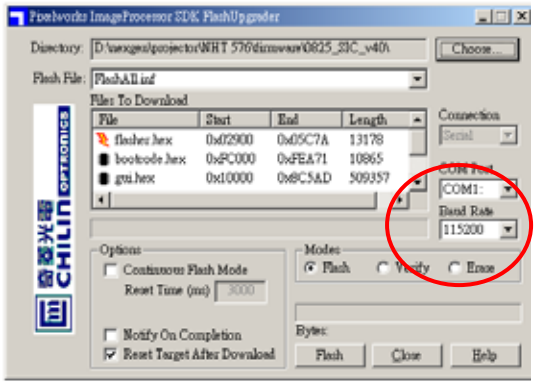
Step 1. Plug RS232 cable into computer and projector.

Step 2. Double click at " FlashUpgarder" to open this file.

Step 3. Click "Choose" and select "FlashAll.inf". There are five .HEX files in FlashAll.inf, flasher.hex, bootcode.hex, gui.hex, configdata.hex, and romcode.hex. Technician is supposed to download all of them.



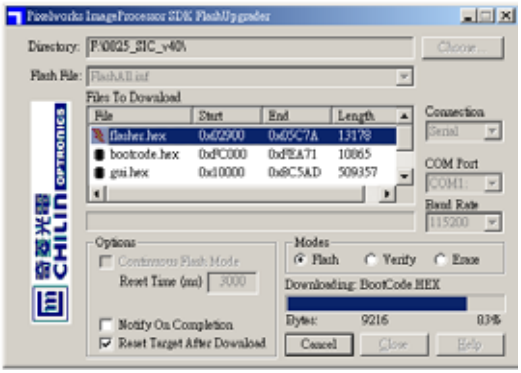
Step 4. Check COM Port (RS232) and set the “Baud Rate” to 115200.



Step 5. Click “Flash” bottom to load firmware to Video Board.

Step 6. Power on projector.

Step 7. Download .HEX file: Flasher, Bootcode, gui, configdata, romcode.



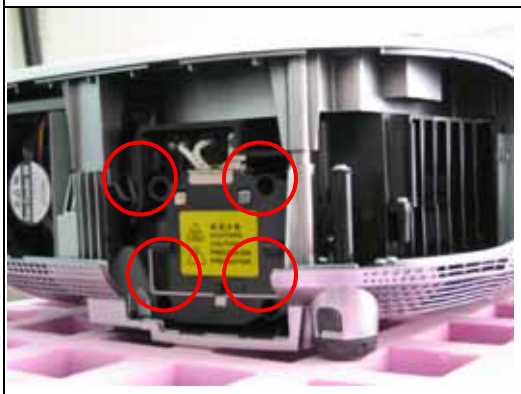
Note: Do not click “Cancel” button when firmware is loading.

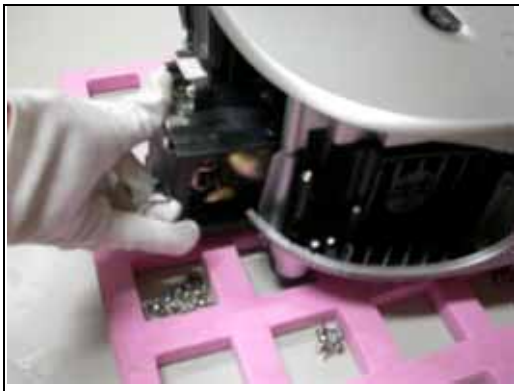
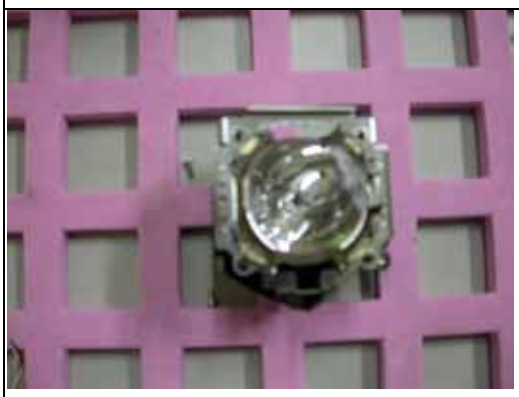
Step 8. Click “Close” button when firmware is loaded.

8. Replacement Procedure (Disassembly & Assembly)

8.1 Replace The Lamp module

The temperature of the lamp, ventilation slots and objects next to them may be extremely high during operation. Before replacing the lamp module, please wait till the temperature is sufficiently cool down.

	1. Loosen 2 screws from Lamp Door. 2. Electric screw driver torque set for 11 lbs.
	3. Take off the lamp door from projector. 4. Electric screw driver torque set for 11 lbs.
	5. Loosen 4 screws on lamp module. 6. Electric screw driver torque set for 11 lbs.

	7. Pull out the failed lamp
	8. The lamp module. Replace a good lamp module in and secure screws on.
	9. Place lamp door on, press all clips of the lamp door into the top and the bottom cabinet and secure 2 screws. 10. Electric screw driver torque set for 11 lbs.

8.1.1 Resetting Lamp Timer

Connect the power cord into AC socket of the projector and turn on the projector.

Press “Menu” on Projector Control Panel or Remote Control. Select “Option” on OSD, then select “Lamp Timer Reset”, when enter to “Lamp Timer Reset”, select “Yes” to reset previous timing record.

Information & Warning: To reset Lamp timer is only allowed when replacing the lamp. If you reset the lamp timer and continue to use the same lamp, this may cause the lamp damaged and exploded.

Picture
Fine Sync
Layout
Options
Input Source
Language
Factory Reset
Options
White Enhance ON
ECO. Mode ON
Auto Power Off ON
Source Select Auto
RS-232C 9600
OSD Timeout 5 secs
Background Blue
OSD Blending OFF
PRJ Mode Rear
Deinterlace
Reset
Lamp Timer Reset
Status
Lamp Timer Reset ?
3H → 0H
Yes: Press
No : Press

8.2 Replace Cooling Fans

	1. Loosen 2 screws from the Lamp Door. 2. Electric screw driver torque set for 11 lbs.
	3. Take off the lamp door from the projector.
	4. Turn over the projector and loosen the screw by the I/O port. 5. Electric screw driver torque set for 11 lbs.
	6. Loosen 8 screws from the bottom cabinet. 7. Electric screw driver torque set for 11 lbs.

	8. Turn over the projector, take off the top cabinet, and disconnect the 10-pin cable which connects the video board and the keypad and the 6-pin cable connecting controller board and keypad. 9. Electric screw driver torque set for 6.6 lbs.
	10. Take off the top cabinet.

※ Hereinafter, you can find disassembly and reassembly procedure for each cooling fan.

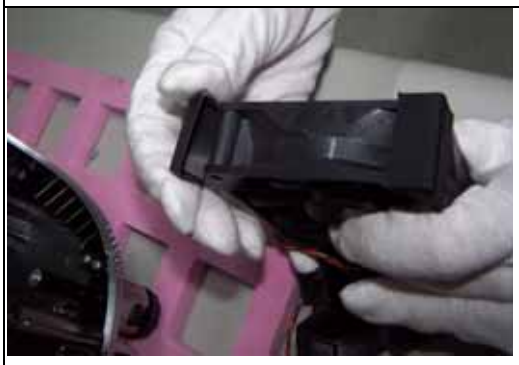
(1) The Front Axial Fan

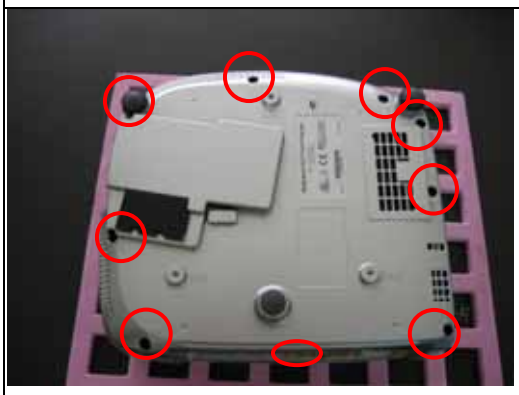
(2) The Rear Axial Fan

(3) The Blower Fan

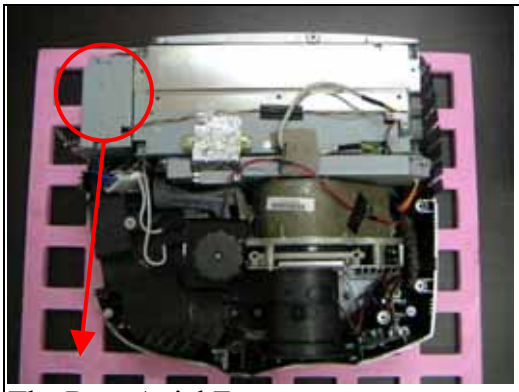
8.2.1 Replace The Front Axial Fan

The Front Axial Fan	1. Take step 1-7 from page 29 to 30 to dismantle the top cabinet. 2. Electric screw driver torque set for 6.6 lbs.
	3. Disconnect the 3-pin cables from the **red** connector on the control board. 4. Electric screw driver torque set for 6.6 lbs.
	5. Loosen 2 screws on the lamp door front lock and take it off from the bottom cabinet. 6. Electric screw driver torque set for 6.6 lbs.
	7. Loosen 2 screws to take off the axial fan module. 8. Electric screw driver torque set for 6.6 lbs.

	9. Loosen 1 screw to disassemble the duct. 10. Electric screw driver torque set for 6.6 lbs.
	11. Remove the 4 fan Rubbers from the failed fan. Replace the failed fan with a good one.
	12. Place the fan rubber onto the fan and assemble the duct on. Note: The label on the fan must be toward to the lamp door when assembly.
	13. Place the fan module back to the bottom cabinet, secure 2 screws on, and reconnect the fan's cable to the control board. Secure the front lock back.

	14. Reconnect the cables which connect to keypad on top cabinet. And place the top cabinet on. Note: The two wires should be pull backward to the electronic parts. If the wires are left on the optical engine, the keypad sensitivity will be affected. 15. Electric screw driver torque set for 6.6 lbs.
	16. Test the projector. If the unit functions well, go to step 11. If the LED flashs, disconnect the wires from keypad and go back to step 6 on page 30 and disassemble the projector to check the connectors and fans.
	17. Turn over the projector and secure 9 screws on the bottom cabinet. 18. Electric screw driver torque set for 11 lbs.
	19. Place lamp door on, press all clips of the lamp door into the top and the bottom cabinet and secure 2 screws. 20. Electric screw driver torque set for 11 lbs.

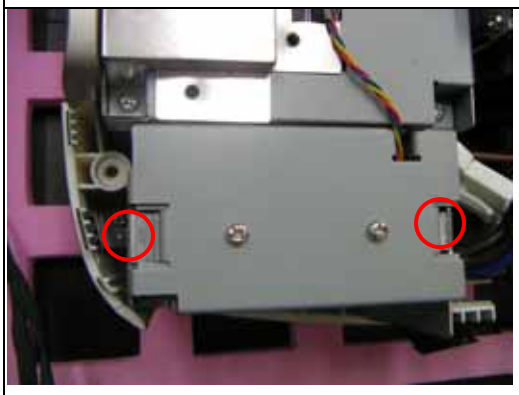
8.2.2 Replace The Rear Axial Fan



The Rear Axial Fan

1. Take step 1-7 from page 29 to 30 dismantle the top cabinet.

2. Remove the 3-pin cable from the clips. Disconnect the 3-pin fan cable from the **green** connector on the control board.
3. Electric screw driver torque set for 6.6 lbs.



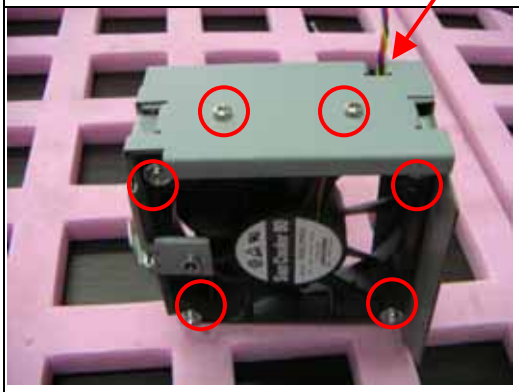
4. Loosen 2 screws which secure the rear axial fan module. Pull out the real axial fan module from the bottom cabinet.
5. Electric screw driver torque set for 6.6 lbs.

6. Loosen 2 screws to take off the metal duct from the rear axial fan.
7. Electric screw driver torque set for 11 lbs.

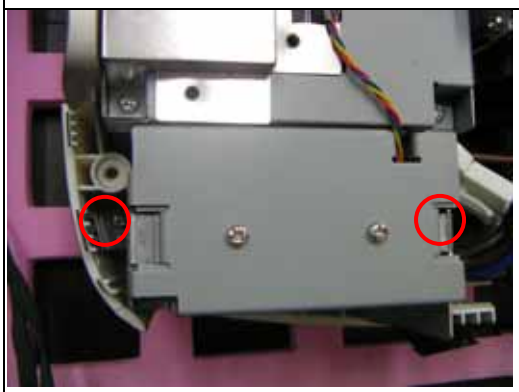
8. Loosen 4 screws to pull up the rear axial fan from the duct shielding, and replace the failed rear Axial fan.

Note: The wire should go thru the opening of the duct.

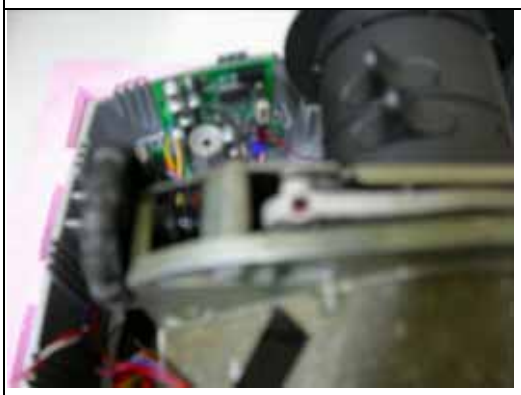
9. Electric screw driver torque set for 11 lbs.



10. Assemble the duct shielding and the duct back.
11. Electric screw driver torque set for 11 lbs.



12. Place the rear axial fan module back to the bottom cabinet and secure it.
13. Electric screw driver torque set for 6.6 lbs.



14. Reconnect the fan cable to the control board.

15. Reconnect the cables which connect to keypad on top cabinet. And place the top cabinet on.

Note: The two wires should be pull backward to the electronic parts. If the wires are left on the optical engine, the keypad sensitivity will be affected.

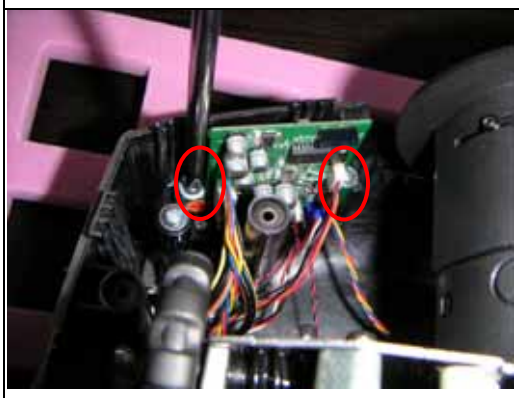
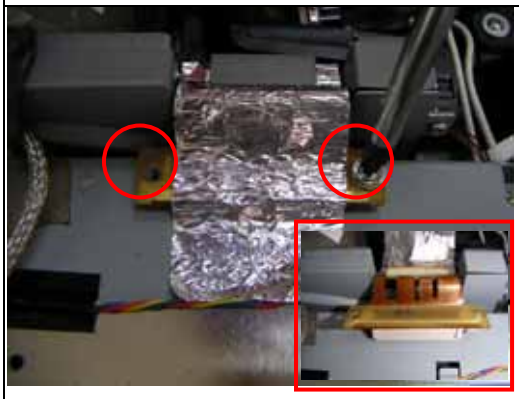
16. Electric screw driver torque set for 6.6 lbs.

17. Test the projector. Test the projector. If the unit functions well, go to step 11. If the LED flashs, disconnect the wires from keypad and go back to step 6 on page 30 and disassemble the projector to check the connectors and fans.

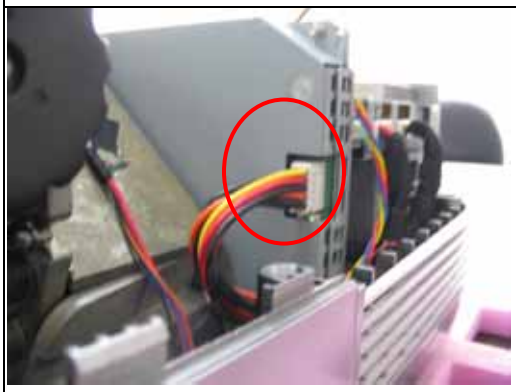
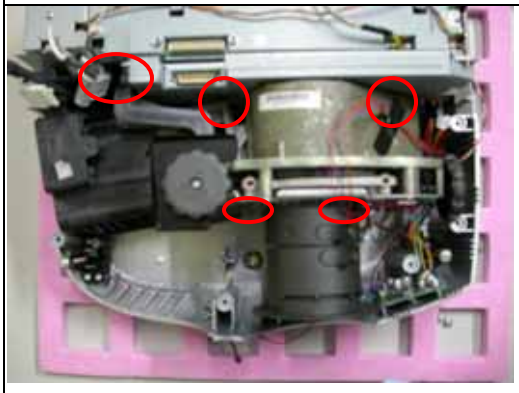
18. Turn over the projector and secure 9 screws on the bottom cabinet.
19. Electric screw driver torque set for 11 lbs.

20. Place the lamp door on and secure it.
21. Electric screw driver torque set for 11 lbs.

8.2.3 Replace The Blower Fan

	1. Take step 1-7 from page 29 to 30 to dismantle the top cabinet.
	2. Loosen 2 screws securing the control board. Pulling up the control board and disconnecting the wire from the blue connector. 3. Electric screw driver torque set for 6.6 lbs.
	4. Remove the lamp door front lock and the front axial fan from the bottom cabinet by loosening 4 screws (2 for lamp door front lock and 2 for Axial fan)
	5. Loosen 2 screws on the connection board. Remove the EMI shielding and disconnect the connection board from the Video module. Note. Do not pull the connection board out from the connector on the formatter board, or unfixable damage on connection board may be occurred 6. Electric screw driver torque set for 11 lbs.

	7. Loosen 1 screw from the lamp housing for unpluging the power cord connecting the lamp housing and the ballast. 8. Electric screw driver torque set for 11 lbs.
	9. Unplug the two ropes from the thermostat.
	10. Disconnect the white switch connecting the lamp housing and the power module.
	11. Disconnect the 5-pin cable of the lamp switch from the formatter board.

	12. Loosen 1 screw from the shielding net. And take off the shielding net.
	13. Disconnect the cable from the formatter board.
	14. Remove the tapes which tape the 10-pin cable which connects the video board and the keypad and the 6-pin cable connecting the control board and the keypad.
	15. Loosen 5 screws to take the optical engine from the bottom cabinet.

16. Take the optical engine out from the bottom cabinet.

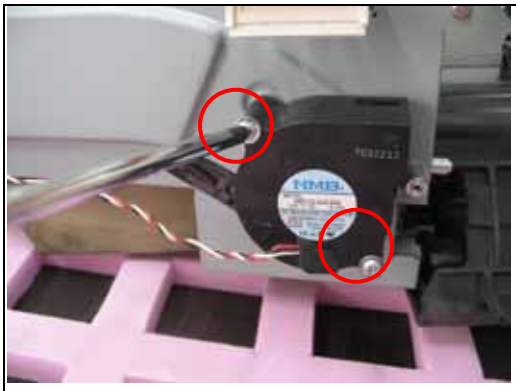
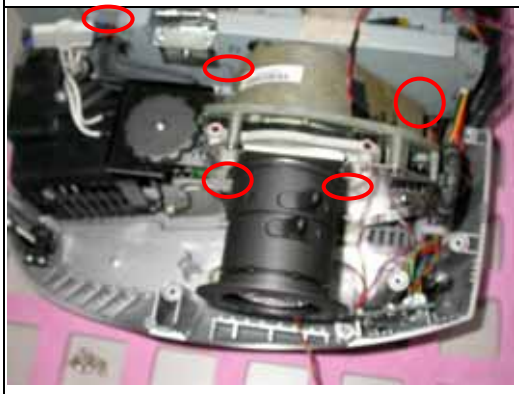
The duct The blower fan

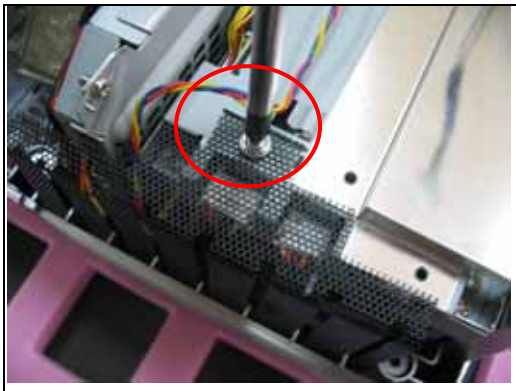
17. The Optical Engine

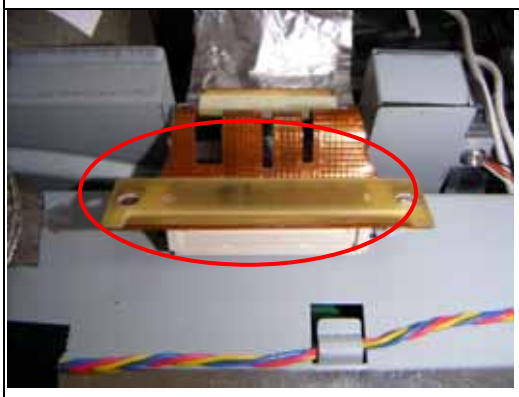
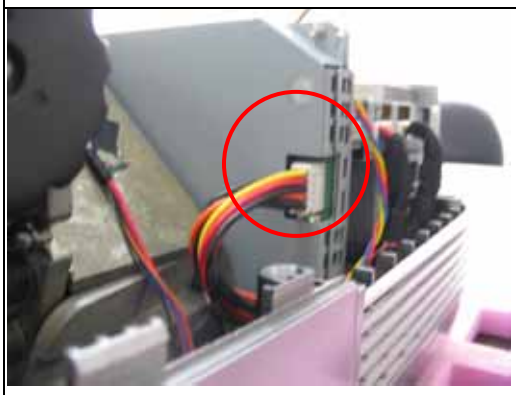
The Thermal Sensor

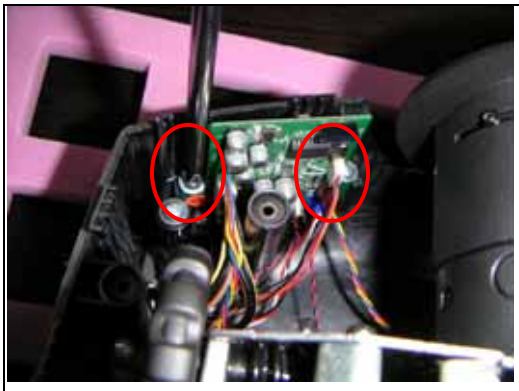
18. The Optical Engine

19. The blower fan is on the back side of the Optical Engine. Loosen two screws to take off the duct.
20. Electric screw driver torque set for 11 lbs.

	21. Loosen 2 screws to take away failed blower fan. Place the good blower fan on and secure it. 22. Electric screw driver torque set for 11 lbs.
	23. Set the duct to its position and secure it on formatter module.
	24. Place the Optical Engine back to the bottom cabinet
	25. Secure the optical engine back to the bottom cabinet.

	26. Place the shielding net back and secure it. 27. Electric screw driver torque set for 11 lbs.
	28. Reconnect the 5-pin cable to the formatter board.
	29. Reconnect the white switch .
	30. Connect the power cord back to the lamp housing and secure the screw on.

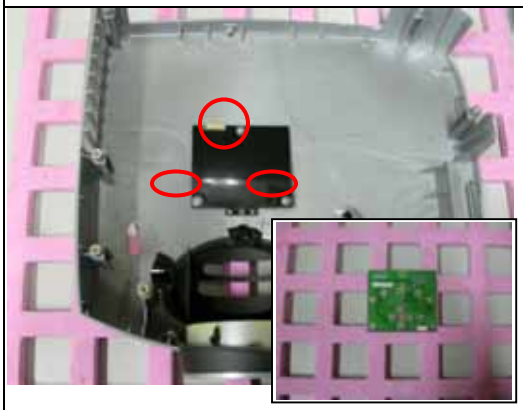
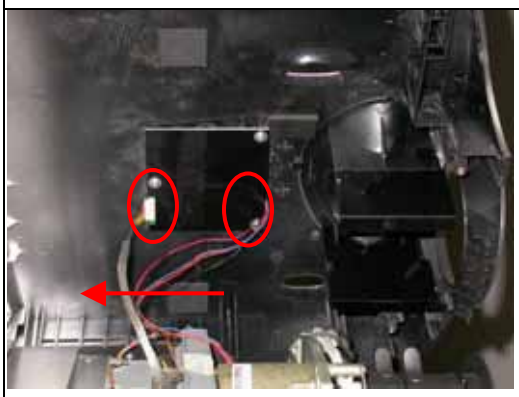
	31. Reconnect the 2 wires to the thermostat.
	32. Place the connection board back to the connector on video board, and secure the connection board and shielding it by EMI shielding
	33. Plug the cable from the video board into the connector on the formatter board
	34. Secure the front Axial fan module and the lamp door front lock on the bottom cabinet. 35. Electric screw driver torque set for 6.6 lbs.

	36. Connect cable to the control board. Place the control board back and secure it. 37. Electric screw driver torque set for 6.6 lbs.
	38. Reconnect the cables which connect to keypad on top cabinet. And place the top cabinet on. Note: The two wires should be pull backward to the electronic parts. If the wires are left on the optical engine, the keypad sensitivity will be affected. 39. Electric screw driver torque set for 6.6 lbs.
	40. Test the projector. Test the projector. If the unit functions well, go to step 32. If the LED flashs, disconnect the wires from keypad and go back to step 6 on page 30 and disassemble the projector to check the connectors and fans.
	41. Turn over the projector and secure 9 screws on the bottom cabinet. 42. Electric screw driver torque set for 11 lbs.

43. Turn over the projector. Place the lamp door on and secure it.
44. Electric screw driver torque set for 11 lbs.

8.3 Replace The Keypad

	1. Loosen 2 screws from the Lamp Door. 2. Electric screw driver torque set for 11 lbs.
	3. Take off the lamp door from the projector.
	4. Turn over the projector and loosen the screw by the I/O port. 5. Electric screw driver torque set for 11 lbs.
	6. Loosen 8 screws from the bottom cabinet. 7. Electric screw driver torque set for 11 lbs.

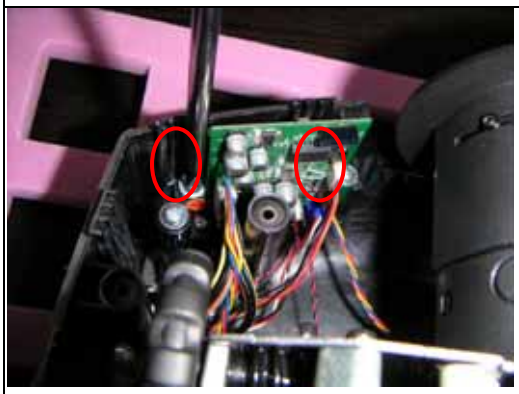
	8. Turn over the projector, take off the top cabinet, and disconnect the 10-pin cable which connects the video board and the keypad and the 6-pin cable connecting controller board and keypad. 9. Electric screw driver torque set for 6.6 lbs.
	10. The top cabinet and the keypad. Loose 3 screws to replace the defective keypad module. 11. Electric screw driver torque set for 6.6 lbs.
	12. Reconnect the cables which connect to keypad on top cabinet. And place the top cabinet on. Note: The two wires should be pull backward to the electronic parts. If the wires are left on the optical engine, the keypad sensitivity will be affected. 13. Electric screw driver torque set for 6.6 lbs.
	14. Test the projector. If the keypad is still defective, check the cables connected to the keypad.

	15. Turn over the projector and secure 9 screws on the bottom cabinet. 16. Electric screw driver torque set for 11 lbs.
	17. Place the lamp door on and secure it. 18. Electric screw driver torque set for 11 lbs.

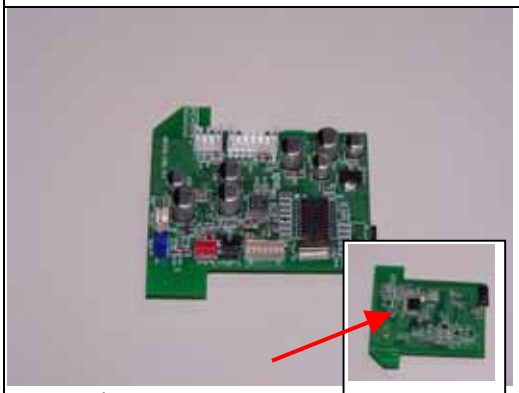
8.4 Replace The Control Board

	1. Loosen 2 screws from the Lamp Door. 2. Electric screw driver torque set for 11 lbs.
	3. Take off the lamp door from the projector. 4. Electric screw driver torque set for 11 lbs.
	5. Turn over the projector and loosen the screw by the I/O port. 6. Electric screw driver torque set for 11 lbs.
	7. Loosen 8 screws from the bottom cabinet. 8. Electric screw driver torque set for 11 lbs.

9. Turn over the projector, take off the top cabinet, and disconnect the 10-pin cable which connects the video board and the keypad and the 6-pin cable connecting controller board and keypad.
10. Electric screw driver torque set for 6.6 lbs.

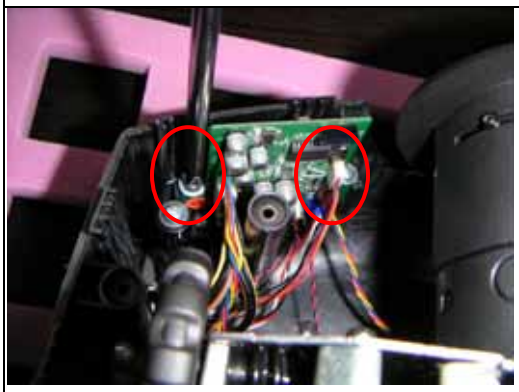


11. Loosen 2 screws securing the controller board. Pulling up the controller board and disconnecting all cables on it
12. Electric screw driver torque set for 6.6 lbs.

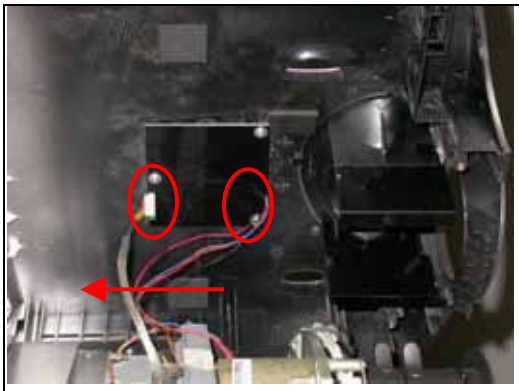


The Front IR Sensor

13. The control board. Replace the control board if the control board is malfunction.

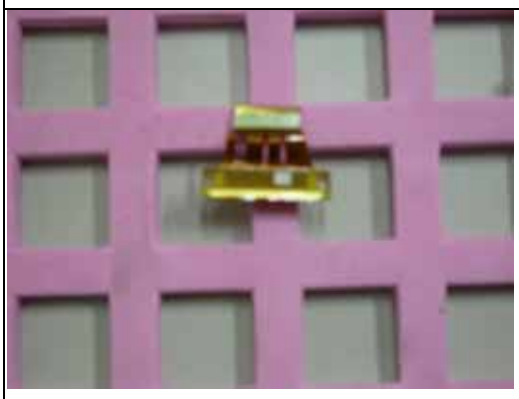


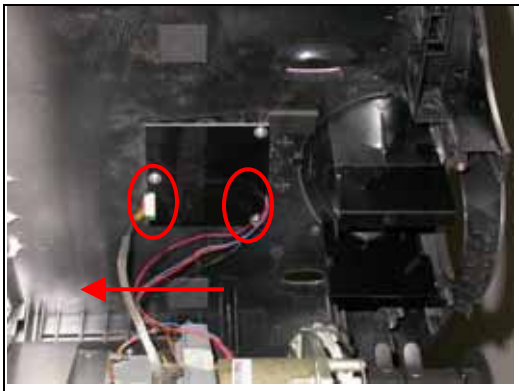
14. Connect cables to the controller board. Place the controller board back and secure it.
15. Electric screw driver torque set for 6.6 lbs.

	16. Reconnect the cables which connect to keypad on top cabinet. And place the top cabinet on. Note: The two wires should be pull backward to the electronic parts. If the wires are left on the optical engine, the keypad sensitivity will be affected. 17. Electric screw driver torque set for 6.6 lbs.
	18. Test the projector. If the projector is still malfunction, check the connection of all cables on the control board and the keypad. 19. Electric screw driver torque set for 6.6 lbs.
	20. Turn over the projector and secure 9 screws on the bottom cabinet. 21. Electric screw driver torque set for 11 lbs.
	22. Place the lamp door on and secure it. 23. Electric screw driver torque set for 11 lbs.

8.5 Replace The Connection Board

	1. Loosen 2 screws from the lamp Door. 2. Electric screw driver torque set for 11 lbs.
	3. Take off the lamp door from the projector. 4. Electric screw driver torque set for 11 lbs.
	5. Turn over the projector and loosen the screw by the I/O port. 6. Electric screw driver torque set for 11 lbs.
	7. Loosen 8 screws from the bottom cabinet. 8. Electric screw driver torque set for 11 lbs.

	9. Turn over the projector, take off the top cabinet, and disconnect the 10-pin cable which connects the video board and the keypad and the 6-pin cable connecting controller board and keypad. 10. Electric screw driver torque set for 6.6 lbs.
	11. Loosen 3 screws on the connection board. Remove the EMI shielding and disconnect the connection board from the Video module. 12. Electric screw driver torque set for 11 lbs.
	13. The connection board.
	14. Replace the failed connection board and secure the good one on.

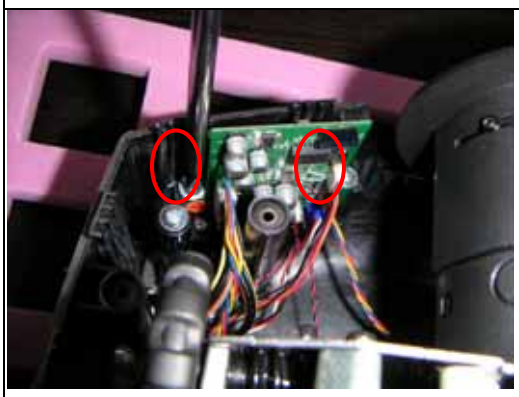
	15. Reconnect the cables which connect to keypad on top cabinet. And place the top cabinet on. Note: The two wires should be pull backward to the electronic parts. If the wires are left on the optical engine, the keypad sensitivity will be affected. 16. Electric screw driver torque set for 6.6 lbs.
	17. Test the projector.
	18. Turn over the projector and secure 9 screws on the bottom cabinet. 19. Electric screw driver torque set for 11 lbs.
	20. Place the lamp door on and secure it. 21. Electric screw driver torque set for 11 lbs.

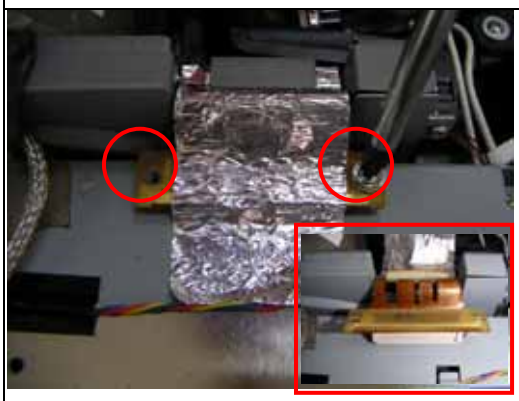
8.6 Replace The Video Module, The I/O Board, The Ballast, The Thermal Sensor, and The Power Module

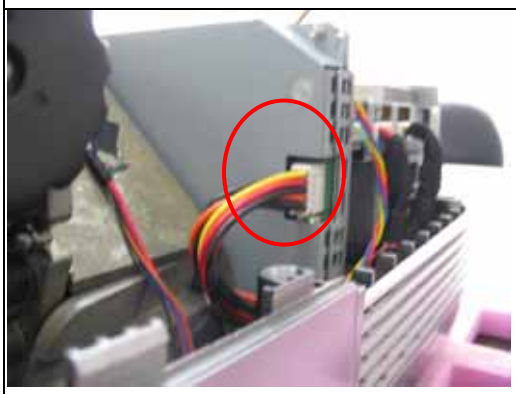
This section will show the disassembly and assembly of the electronic system step by step. The electronic part includes the keypad, the control board, the connection board, the video module, the I/O board, the ballast, the thermal sensors and the power module. The adjustment on the video module (charpter 8.7) is needed when the video module is replaced.

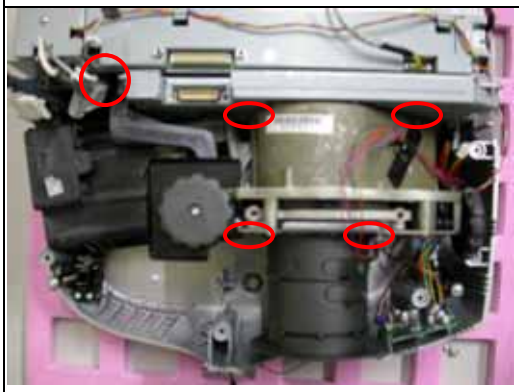
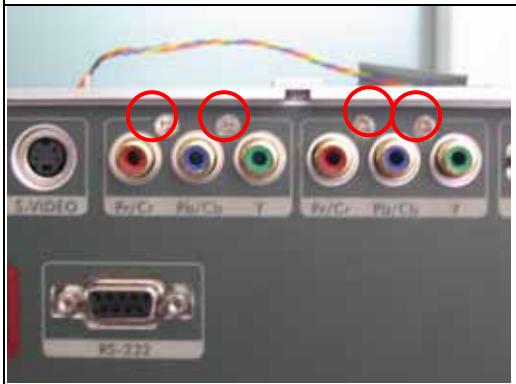
Note: 1. The front IR sensor is located on the control board, and the rear IR sensor is on the I/O board.
2. The front thermal senor is on the optical engine, near the lamp housing, and the rear one is on the power module.

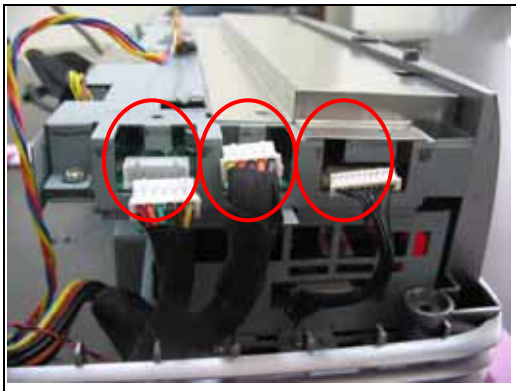
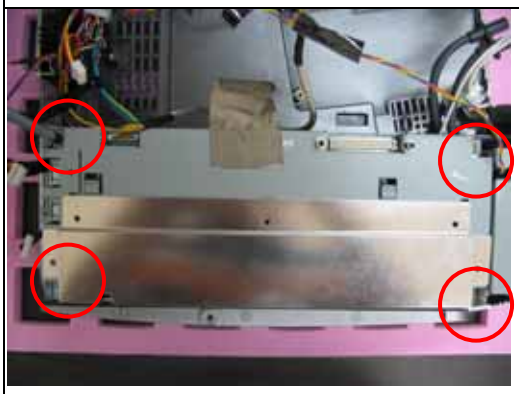
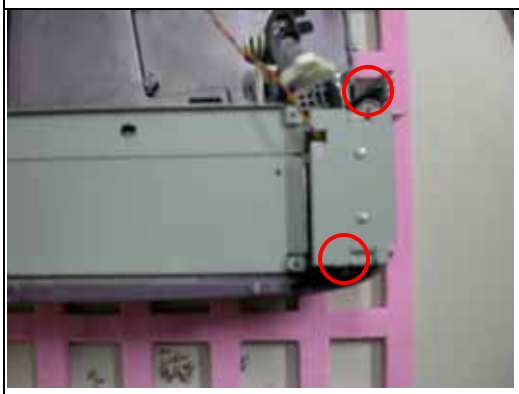
	1. Loosen 2 screws from the Lamp Door. 2. Electric screw driver torque set for 11 lbs.
	3. Take off the lamp door from the projector. 4. Electric screw driver torque set for 11 lbs.
	5. Turn over the projector and loosen the screw by the I/O port. 6. Electric screw driver torque set for 11 lbs.

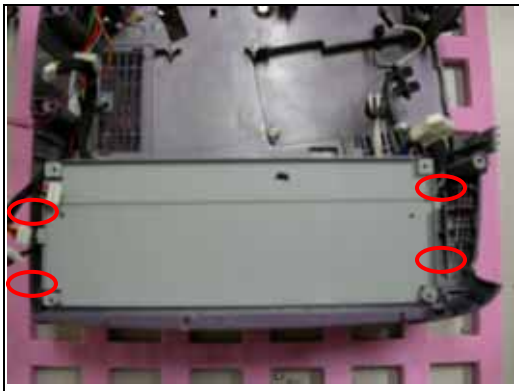
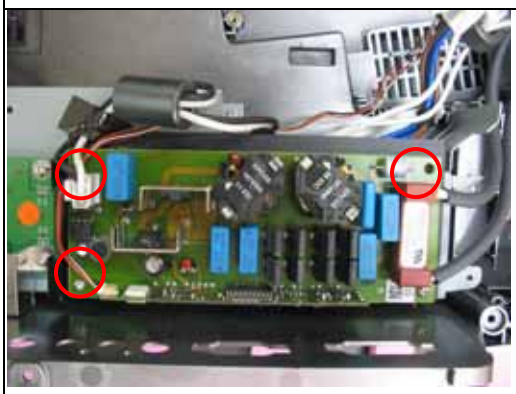
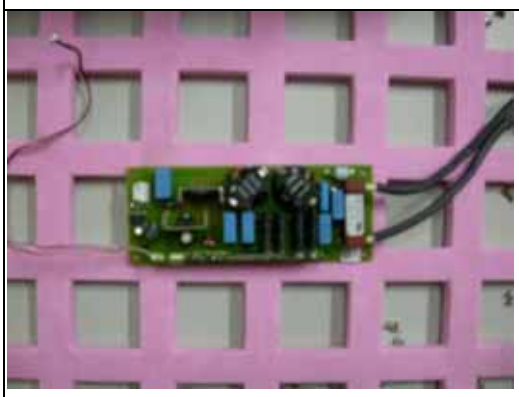
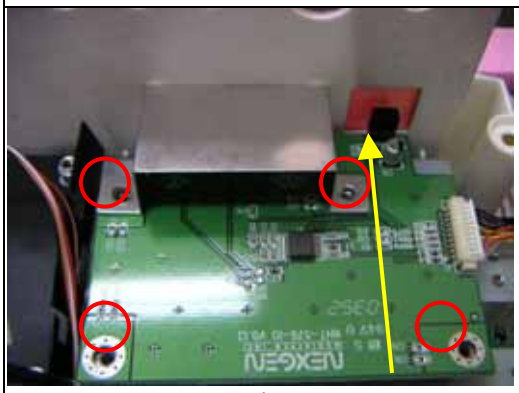
	7. Loosen 8 screws from the bottom cabinet. 8. Electric screw driver torque set for 11 lbs.
	9. Turn over the projector, take off the top cabinet, and disconnect the 10-pin cable which connects the video board and the keypad and the 6-pin cable connecting controller board and keypad. 10. Electric screw driver torque set for 6.6 lbs.
	11. The inside of the projector.
	12. Loosen 2 screws securing the controller board. Pulling up the controller board and disconnecting all cables on it 13. Electric screw driver torque set for 6.6 lbs.

	14. Remove the front lamp door lock and the front axial fan from the bottom cabinet by loosening 4 screws (2 for the lamp door front lock and 2 for the axial fan)
	15. Loosen 2 screws on the connection board. Remove the EMI shielding and disconnect the connection board from the Video module. Note. Do not pull the connection board out from the connector on the formatter module, or unfixable damage may be occurred. 16. Electric screw driver torque set for 11 lbs.
	17. Loosen 1 screw from the lamp housing. Unplug the power cord connecting lamp housing and ballast. 18. Electric screw driver torque set for 11 lbs.
	19. Unplug the two connectors from the thermostat.

	20. Disconnect the white switch connecting the lamp housing and the power module.
	21. Disconnect the 5-pin cable from the formatter module.
	22. Loosen 1 screw from the shielding net. And take off the shielding net.
	23. Unplug the cable from the formatter module.

	24. Remove the tapes which tape the 10-pin cable which connects the video board and the keypad and the 6-pin cable connecting the control board and keypad.
	25. Loosen 5 screws to take the optical engine from the bottom cabinet.
	26. The front thermal sensor. (If the front thermal sensor is defective, replace the thermal sensor and go to step 40 on page 65.)
	27. Loosen 4 screws by the I/O port. 28. Electric screw driver torque set for 6.6 lbs.

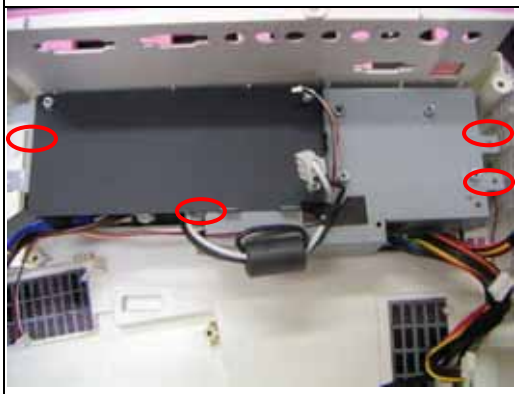
	29. Unplug the cables from the video module.
	30. Loosen 4 screws and take off the video module. 31. Electric screw driver torque set for 11 lbs.
	32. The video module. (If the video module malfunction, replace the defect video module, and go to step 37 on page 64)
	33. Loosen 2 screws which secure the rear axial fan module. Pull out the real axial fan module from the bottom cabinet. 34. Electric screw driver torque set for 6.6 lbs.

	35. Loosen 4 screws to take off the shielding from the power module. 36. Electric screw driver torque set for 6.6 lbs.
	37. Disconnect the cables from the ballast and loosen 3 screws to take the ballast from the electronic module. 38. Electric screw driver torque set for 11 lbs.
	39. The ballast. (If the ballast malfunction, replace the failed ballast with a good one and go to step 34 on page 63)
 The Rear IR Sensor	40. Loosen 4 screws to take the I/O board off. 41. Electric screw driver torque set for 11 lbs.

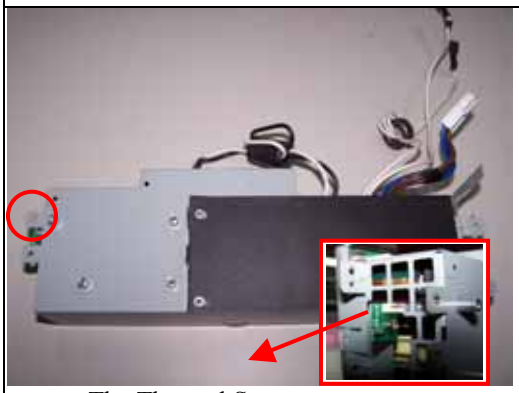
42. The I/O board.

(If the RS232 controller board or the rear IR sensor is failed, replace the failed I/O board with a good one and go to step 33 on page 63)

43. Loosen 2 screws by the AC socket.
44. Electric screw driver torque set for 11 lbs.



45. Loosen 4 screws to take off the power module.
46. Electric screw driver torque set for 11 lbs.

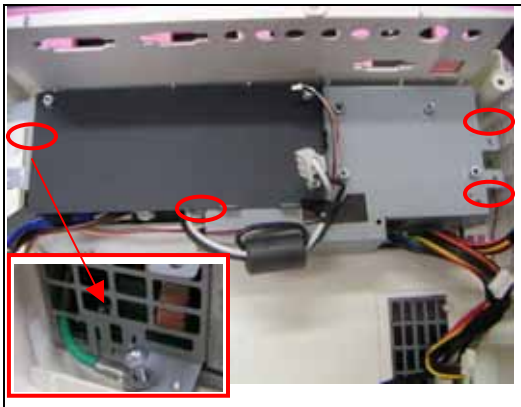
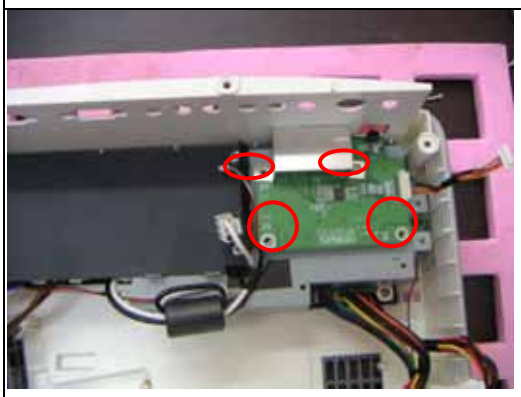
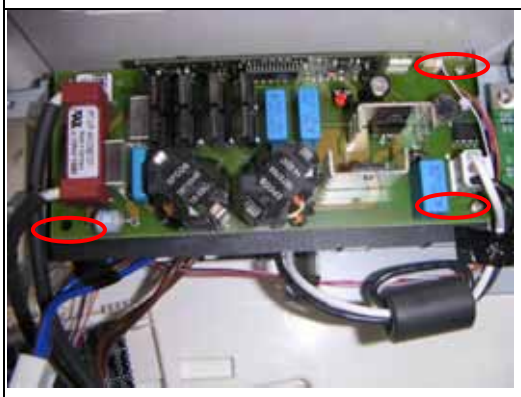
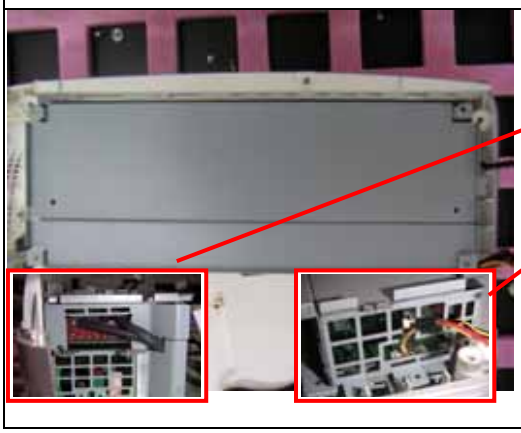


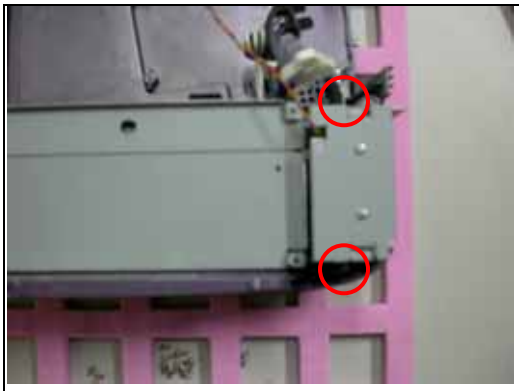
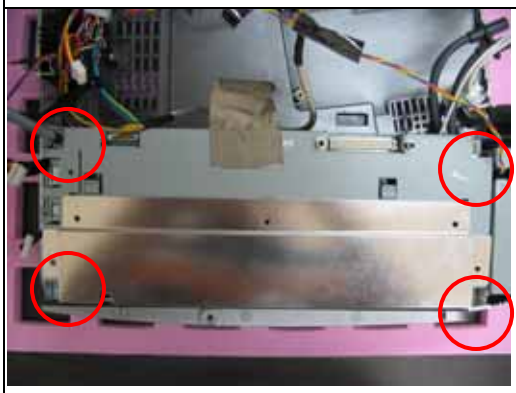
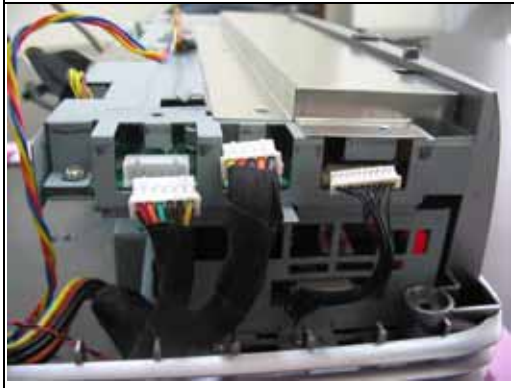
The Thermal Sensor

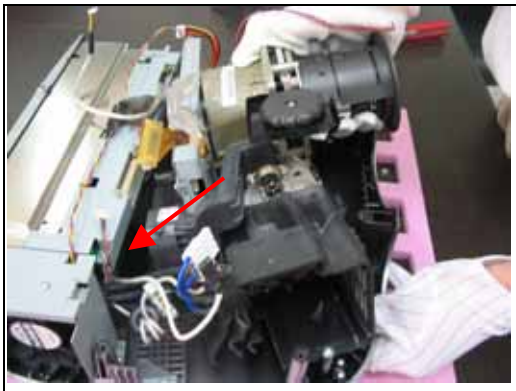
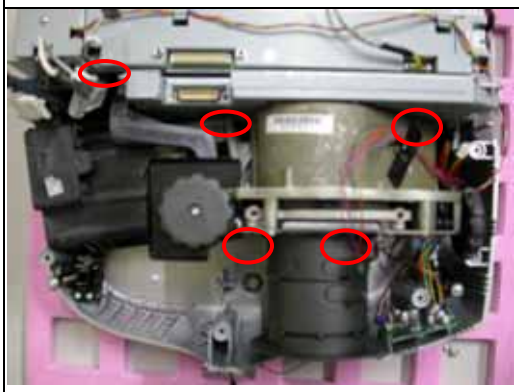
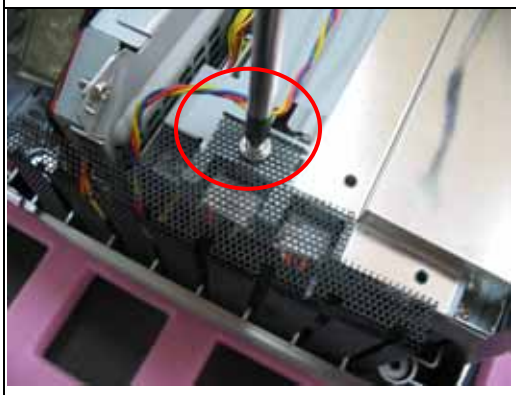
47. The Power module and the rear thermal sensor.

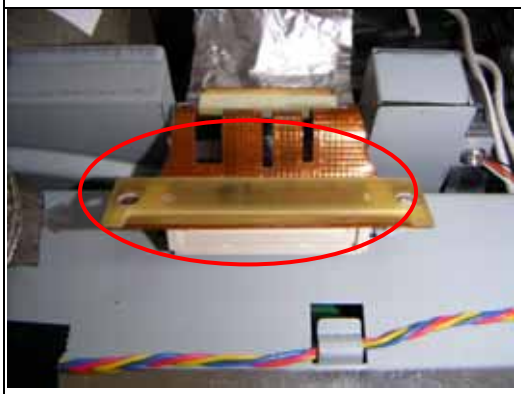
(If the rear thermal sensor is malfunction, replace the rear thermal sensor. The power module does not include the rear thermal sensor, when replace the power module, the thermal sensor need to assemble onto the good power module.)

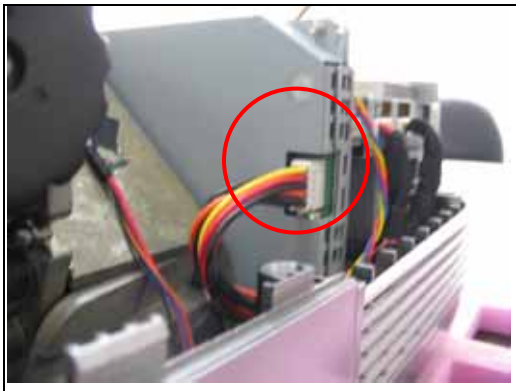
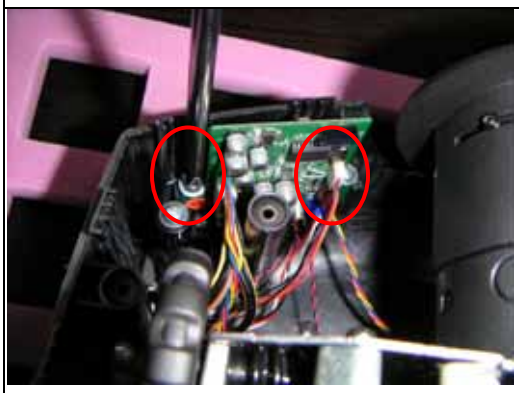
48. Electric screw driver torque set for 11 lbs.

	49. Replace the failed power module and secure it. Note: The grounding cable should be secured on the power module. 50. Electric screw driver torque set for 11 lbs.
	51. Place the I/O board on and secure it with 4 screws. 52. Electric screw driver torque set for 11 lbs.
	53. Place the ballast on and secure it with 3 screws. Connect the cables from the power module to the ballast. 54. Electric screw driver torque set for 11 lbs.
	55. Set the shielding on the ballast and I/O board. The power cord from the ballast must be go through indentation of the shielding. And the cable which connects the IO board and the video module should go through the opening of the shielding. Secure the shielding on the power module.

	56. Secure the rear axial fan to the bottom cabinet. 57. Electric screw driver torque set for 6.6 lbs.
	58. Place and secure the video module onto the shielding. 59. Electric screw driver torque set for 11 lbs.
	60. Secure the 6 screws onto the I/O port. 61. Electric screw driver torque set for 11 lbs.
	62. Plug the cables into the video module.

	63. Place the Optical Engine back to the bottom cabinet
	64. Secure the optical engine back to the bottom cabinet. 65. Electric screw driver torque set for 11 lbs.
	66. Place the shielding net back and secure it. 67. Electric screw driver torque set for 11 lbs.
	68. Reconnect the 5-pin cable to formatter module.

	69. Reconnect the white connector.
	70. Reconnect the 2 wires to the thermostat.
	71. Connect the power cord back to the lamp housing and secure the screw on.
	72. Place the connector board back to the connector on video board, and secure the connection board and shielding it by EMI shielding

	73. Plug the cable from the power module into the connector on the formatter module
	74. Secure the front axial fan and the lamp door front lock on the bottom cabinet. 75. Electric screw driver torque set for 6.6 lbs.
	76. Connect cables to the controller board. Place the controller board back and secure it. 77. Electric screw driver torque set for 6.6 lbs.
	78. Reconnect the cables which connect to keypad on top cabinet. And place the top cabinet on. Note: The two wires should be pull backward to the electronic parts. If the wires are left on the optical engine, the keypad sensitivity will be affected. 79. Electric screw driver torque set for 6.6 lbs.

	80. Test the projector. If the projector could not function well, go back to step 5 on page 57 to disassemble the unit.
	81. Turn over the projector and secure 9 screws on the bottom cabinet. 82. Electric screw driver torque set for 11 lbs.
	83. Place the lamp door on and secure it. 84. Electric screw driver torque set for 11 lbs.

8.7 Procedures for the video module adjustment

Before replacing and testing the video module, you need to have the following equipments and software.

Needed Equipment or Software Program:
1. ASTRO VG828D, SIMIILIAR VIDEO PATTERN GENERATOR, OR VIDEO ESSENTIAL
2. COMPUTER
3. FIRMWARE FOR THE VIDEO MODULE

Step 1: Enter service mode by pressing △ ▷ ▽ ◁ △ ▷ ▽ ◁ and “MENU”, and check the CW index no.

Step 2: Refer to Chapter 8.6 replacing the video module.

Step 3: Refer to Chapter 7 for loading firmware to the video module.

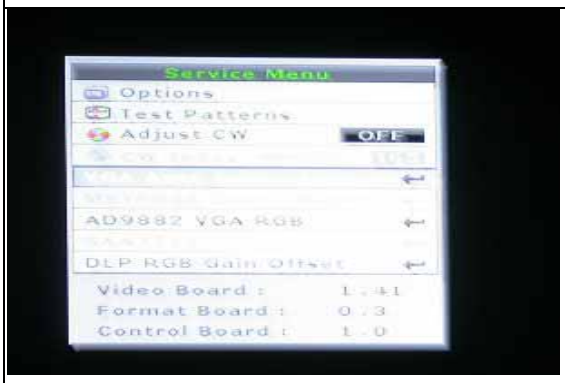
Step 4: Enter service mode, and restore the CW index no. which you read on Step 1.

Step 5: Connecting Projector and Testing Equipment.

- Connecting Component and VGA cable.
- Connecting Projector Power Cord
- Turn on all power switches:
  - Pressing “Power” button to start projector.
  - Switch on Video Pattern Generator

Step 6: Ready to go for adjustment.

	1. Feeding a black pattern from PC (VGA) port.

	2. Enter Service mode by pressing △ ▷ ▽ ◁ △ ▷ ▽ ◁ and “MENU”
	3. Select “VGA Auto Calibration” then press ▷
	4. “Ready for Black Calibration, Press Menu Select to Continue” message shows up, press “MENU”
	5. Wait for “Ready for White Calibration, Press Menu Select to Continue” message shows up, input a **white** pattern then press “MENU”

	6. “Calibration Complete, Press Escape to Exit”, press “EXIT” to leave VGA Auto Calibration.
	7. Feed in 64 step RGBW pattern. If 64 step RGBW bars display clearly and no any color blooming, this adjustment is done successfully. If the pattern is displayed unsmooth, go to next step.
	8. Enter AD 9882 VGA RGB.

	9. Adjust the Gain and Offset of RGB manually.

Step 7: Feed in 64 step RGBW pattern thru. Component port. If 64 step RGBW pattern displays unclearly and has any color blooming, then enter MST 9888 Comp YPbPr and manually adjust the Gain and Offset of RGB color for making the pattern display clearly and no color blooming.

Appendix I: Spare Parts List for P07260 Optoma

Item	Part No.	Description
Main Parts		
1	526-900051-001	CS P05760 Power Module
2	526-900055-001	CS P05760 Keypad Module
3	526-900060-001	CS P05760 IO Board
4	526-900095-001	CS P05760 Ballast Module
5	526-900070-007	P0726 Video Module Optoma
6	510-900012-011	PCBA P05760 Connection Board
7	510-900025-011	PCBA P05760 Front Thermal Sensor
8	510-900014-011	PCBA P05760 Rear Thermal Sensor
9	510-900028-011	PCBA P05762 Control Board
10	526-900052-001	CS Lamp Change Package
Fan Parts		
11	150-120803-001	Rear Axial Fan
12	150-120802-001	Front Axial Fan
13	150-120502-001	Blower Fan
Mechanical Parts		
14	526-900136-001 (RD-526-0603002)	CS P07260 Top Cover Set (Pearl)
15	526-900137-001 (RD-526-0603005)	CS P07260 Lens Cover
16	526-900138-001 (RD-526-0603003)	CS P07260 Lamp Door Module (Pearl)
17	526-900139-001 (RD-526-0603004)	CS P07260 Bottom Cabinet Set (Pearl)
Accessory		
18	290-900008-011	P07260 Remote Controller Optoma
19	170-021801-101	Power Cord USA